A Content Analysis of Television Ads: Does Current Practice Maximize Cognitive Processing?

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"The views expressed in this article are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U.S. Government."

Dedication

For my grandmother, my mother, my husband, and my two sons.

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Abstract

Television advertising is a 67 billion dollar a year industry (McCann, 2008). To help evaluate whether or not advertising dollars are earning the best return on investment, it is important to know how effectively television ads capture and maintain audience attention and engage viewers. Television ads use varied designs to meet many goals including capturing attention, creating brand awareness or product knowledge, motivating consumer behavior, and remembering information. According to the limited capacity model of motivated mediated message processing (LC4MP), structural complexity has the ability to enhance attention and memory for messages, including television ads (A. Lang, 2006). However, complexity can also overload cognitive processing capacity—which can have a negative impact on television advertisement objectives of message encoding. Specifically, this dissertation derived ten *best practices* that articulate the most advantageous ad design for achieving optimal cognitive processing suggested by LC4MP. These include: construct ad copy in chronological order, use simple syntax, and use concrete words in advertising copy. A sample of 619 television ads was content analyzed to compare ad structure to these best practices. The average ad employed six of ten best practices. The best practice most frequently followed was the use of product or service images in ads. The best practice least followed involved the appropriate mix of message complexity and orienting eliciting structural features. Television ads can be improved and this study helps lay the groundwork from which to build theoretically sound production elements.

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Chapter 1

Introduction

Television advertising is a 67 billion dollar a year industry (McCann, 2008). To help evaluate the extent to which advertising dollars are earning the best return on investment, it is important to know how effectively television ads are able to capture and maintain audience attention and how likely they are to engage the cognitive processing of the consumer to an extent comparable to objectives. Today, the modern marketing strategies of most business firms rely heavily on creative advertising to promote their products to their target audiences (Alsmadi, 2006). There are myriad goals of advertising, but this study will focus on the goals of capturing audience attention and increasing product recognition—two of the most cited purposes of advertising (Ephron, 1998; Niederquell, 1991; Vagnoni, 1999).

As more and more products enter the market, competition has intensified. In turn, consumers have become increasingly educated, sophisticated, savvy, and selective in their purchasing decisions. Having a good product is often not enough to compete in crowded market sectors where consumers have high standards (Alsmadi, 2006; Kumar & Reinartz, 2006). Market shifts and consumer motivation are driving marketers to focus on more persuasive messages to promote their products. Television advertising employs creative strategies to attract viewers and influence product recognition. However, research has demonstrated that, while creativity is an important part of advertising style and effectiveness, it should not be considered in a vacuum. Marketers also need to understand cognitive processing theories that address how consumers attend to and remember ads (for discussion, see Alsmadi, 2006).

Television audiences are exposed to substantial amounts of advertising stimuli that influence their cognitive processing on a daily basis. Understanding television ad structure and the ad's potential to receive full attentional resources is important to the ad design process. This dissertation will help delineate and systematically analyze specific message structures that engage automatic and controlled cognition, and thereby influence message recognition. From that, the study will derive a series of best practices that will articulate the most advantageous ad design to achieve optimal cognitive processing for audiences 18 through 49 years of age. Finally, a sample of television ads will be content analyzed to compare their structure to best practices within the context of the limited capacity model of motivated mediated message processing (LC4MP; A. Lang, 2006). Results from this examination will begin a dialog that will ultimately lead to a new ad production paradigm that recognizes the importance of constructing ad copy that is designed for most thorough cognitive processing.

CHAPTER 2

Review of Literature

The Limited Capacity Model of Motivated Mediated Message Processing (LC4MP)

The limited capacity model of mediated message processing, developed by A. Lang (2000), and later refined with the inclusion of motivation (A. Lang, 2006), holds that there is a limited pool of cognitive resources; one's motivation or personal interest will determine how resources are divided and ultimately determine the extent to which environmental stimuli are attended.

There are five main theoretical assumptions of LC4MP. First, the model assumes that humans are limited capacity information processors, and have a set amount of cognitive resources to apply to the task of perceiving, encoding, understanding, and remembering environmental stimuli (A. Lang, 2006). "When there are insufficient resources available, processing suffers" (A. Lang, 2006, p. S59). Second, the nature of motivation assumes that people have two underlying motivational systems—the appetitive system and the aversive system (Bradley, 1994; Cacioppo & Gardner, 1999; P. Lang, Bradley, & Cuthbert, 1997). In the presence of motivationally relevant environmental stimuli, these systems activate automatically and influence ongoing cognitive processing (A. Lang, 2006). A third assumption concerns the nature of mediated messages. LC4MP posits that media consist of variably redundant information streams that are presented through multiple sensory channels (i.e. eyes, ears) and in multiple formats such as television, still pictures, text, and audio (A. Lang, 2006; Reeves, Thorson, & Schleuder, 1985; Reeves, Thorson, & Schleuder, 1986; Thorson, Reeves, & Schleuder, 1986). Fourth, LC4MP assumes that human behavior occurs overtime and changes from one moment to the next, rendering human behavior and cognition a dynamic process (A. Lang, 2006; Thelen & Smith, 1994). Fifth, the nature of communication assumes that the communication process is an over time interaction between the human motivated information processing systems and the messages being communicated (Geiger & Reeves, 1993; A. Lang, 2000; A. Lang, 2006; Rafaeli, 1988). Because elements of the message impact the way the human brain processes information, and the state of the human brain impacts the message information that is processed, the nature of communication is a continuous and interactive process. In other words, elements of the message influence cognitive and motivational systems, and elements of the cognitive and motivational systems influence how the message is perceived, encoded, stored, and retrieved (A. Lang, 2006).

LC4MP maintains that cognition has at least three main subprocesses: encoding, storage, and retrieval. Each requires cognitive resources (A. Lang, 2006). Encoding is the process of making mental representations of environmental stimuli in order to interpret it, understand it, and (possibly) store it. Storage is the process of linking newly encoded information with previously stored information in long-term memory networks. Retrieval is the process of reactivating previously stored information into working memory. According to the model, cognitive subprocesses compete for resources which are finite. In other words, if an individual allocates 60 percent of his/her resources to the process of encoding, there is only 40 percent left for storage and retrieval, which may result in poorer information processing in storage and retrieval (A. Lang, 2005; A. Lang et al., 2006).

There are many stimuli in our environment that compete for our attention. What stimuli get attended to depends on how resources are applied to the subprocess of encoding, storage, and retrieval. Attending to environmental stimuli is either a controlled or automatic process (A. Lang, Potter, & Bolls, 1999; Schneider, Dumais, & Shiffrin, 1984; Wickens, 1984).

Controlled attention is driven by personal goals or interests which, in turn, influence how an individual assigns cognitive resources to a certain task. Controlled processing is an individual's ability to control or suppress a response to environmental stimuli (deliberately assigning cognitive resources to a certain task), and is related to individual goals and interests. For instance, if there is an ad for an item that one wants to purchase, and that ad mentions the phone number for a local dealership, the viewer can increase cognitive resources to storage, thereby increasing the likelihood of committing the phone number to memory.

Automatic attention responses are primitive responses that keep an individual alert to environmental changes (A. Lang et al., 2006). Automatic processing is an uncontrollable or reflexive response to environmental stimuli which automatically elicits the allocation of resources (A. Lang, 2006). One way automatic allocation is engaged is through the elicitation of an orienting response (A. Lang, 2006). According to LC4MP, people automatically orient to things that are motivationally salient, novel, or learned signals (A. Lang, 2006; A. Lang, Bradley, & Sparks, 2004; A. Lang, Newhagen, & Reeves, 1996; A. Lang, Sparks, Bradley, Lee, & Wang, 2004; P. Lang, Bradley, & Cuthbert, 1990).

According to A. Lang (2006), motivationally relevant stimuli are related to survival. Orienting to relevant stimuli evolved to help an organism find food and mates to ensure the continuation of the individual and thereby the species. Novel stimuli are not necessarily things that one has never been exposed to before; instead, they are things that are introduced as novel within a particular environment (A. Lang, 2006). An example of novel stimuli is seeing a sudden flash of light or hearing a loud bang; but novelty can also be subtle environmental changes such as a voice change in radio or a scene change in television. Learned signals uniquely indicate important information to individuals and vary from person to person. An example of a learned signal is hearing one's name. Research has shown that if one's name is called, even while otherwise engaged, one will orient to it (A. Lang, 2006).

LC4MP also claims that there are times when resources are automatically allocated in response to biological motivation. This allocation is a function of the appetitive (approach) and aversive (avoidance) motivation systems (A. Lang, 2006). The appetitive system is related to positive valence and the aversive system is related to negative valence (Cacioppo & Gardner, 1999; A. Lang, 2005). Research studies have explored the concept of two separate valence continua —one positive and one negative. Scholars found the concept of the two separate continuums to be robust because research has demonstrated situations in which individuals can simultaneously experience different levels of positive and negative valence (A. Lang, 2006; Watson & Tellegen, 1995). The extent to which the motivation systems are activated influences how environmental stimuli are perceived, encoded, stored and retrieved.

In an appetitive environment where opportunity is present, an organism is motivated to encode and store information. Because encoding and storage are enhanced, memory for details is enhanced. This is an evolutionary survival response because in the past, an organism needed to remember where food was stored for future nourishment

(A. Lang, 2006). Conversely, in a highly aversive environment such as a threatening setting, detail memory is degraded, as an organism is motivated to take a defensive posture. In this situation, resources are shifted away from encoding and transferred to retrieval in order to determine the best means of survival—fight or flight (A. Lang, 2006). By concentrating resources on the subprocess of encoding, processing for storage suffers and details are remembered less well.

The Limited Capacity Model and Processing Television Advertising

The structural content and goals of televised messages are variables within the limited capacity theory (A. Lang, 2006). Message "…contents, and goals will lead to different patterns of motivational and cognitive responses in viewers that, interacting with the structure and content of the messages and the individual differences of the media user, determine a great deal about how a message is processed, including which parts of the message are attended to, encoded, and stored and how the message is evaluated and linked" (A. Lang, 2006, p. S58). The principles of cognitive processing can extend to other messages, and this paper extends the concept of cognitive processing of messages to television ads.

A primary tenet of LC4MP is that humans are limited capacity processors. Derived from this are recommendations that apply to all ads when it comes to the content of their ad copy. The following best practice (BP) recommendations will offer the least cognitively taxing constructs for ads regardless of other design elements employed.

Overall Best Practices Concerning Content Complexity

In accordance with LC4MP, in order to optimize message processing while maintaining attention and arousal, it is important to structure message chronologically, use simple syntax, use concrete words and images, and match audio and visual presentations. Viewers are limited capacity information processors. For a message to be thoroughly processed, it must be attended, encoded into the working memory, stored in long-term memory, and able to be subsequently retrieved from long-term memory. A limited capacity information processing approach to structuring messages has not only shown that using chronological narratives, concrete words and images, and high levels of audio/video redundancy improve message processing, but it has also demonstrated that failing to utilize these strategies has a detrimental effect on message processing (A. Lang, 1995).

Chronological narrative, simple syntax, concreteness, image use, and audio/visual redundancy are the best practices that apply to all television ads. In the absence of new technology, such as VCRs, TiVo, and DVRs, viewers cannot stop, rewind, and replay broadcast material that was poorly understood or incompletely perceived. Using chronological narrative, simple syntax, concrete words, an image of the product or service advertised, and audio/visual redundancy reduce the risk of poor message processing and result in higher levels of recognition for ad information in general.

Chronological order. Traditional news-writing styles are designed to capture attention, but according to research, they are not structured to maximize message memory (Findahl & Hoijer, 1981). Using inverted pyramid formats, newscasts first present what is new or different, then present what caused the change, followed by the consequences of the change (Findahl & Hoijer, 1981; Stephens, 1980). Processing information in this format is difficult for viewers who are not familiar with the issue (Findahl & Hoijer, 1981).

A. Lang (1989) investigated memory for television newscasts and found evidence supporting the idea that the order of information presented in news stories influences recognition memory. A. Lang suggested that newscasts using lead-in style narrative that first hooks the viewer with the heart of a story, then provides support for the lead-in story, and ends with a sensational piece of information, may stress the viewer's cognitive processing ability. A. Lang argued that in order to sufficiently process traditionally formatted news stories, the viewer must have the ability to simultaneously process incoming information and access stored information. Generally, audiences are usually not ready to expend such processing effort, resulting in poor memory for the newscast. Results from A. Lang (1989) suggest that messages presented chronologically, with a beginning, middle, and end are better remembered than messages delivered in non-chronological styles. Using chronological order increases the chance for newscast information to become a part of the viewer's knowledge base. This results from the reduction of resources required to process the message, thereby increasing resources available for storage. Results from A. Lang suggest that recognition memory is better for news stories presented in chronological order than for stories presented in typical broadcast style. Using a "hook the viewer" strategy is important in the advertising business because ad executives don't want to lose viewers during ad breaks, but it is equally important to follow writing practices that facilitate message processing. Advertisers need to include enough complexity to maintain viewer interest and simultaneously ensure that complexity will not interfere with information processing.

Wise, Bolls, Myers, and Sternadori (2008) conducted an experiment on how the writing style of online news affects the cognitive processing of accompanying video clips. The study compared differences in the inverted pyramid writing style and the narrative writing style. The theoretical assumption underlying this experiment was that different styles of written news copy placed varying demands on cognitive resources allocated to encoding an accompanying video clip (Wise et al, 2008). As expected, the study found that the interaction of cognitive processes involved in reading online text and viewing a related video clip impacted recognition of story details (Wise et al, 2008). Specifically, the experiment demonstrated that more cognitive resources were allocated to encoding videos in the inverted pyramid text condition; however, participants more accurately recognized videos from accompanying narrative style stories than videos from accompanying inverted pyramid style stories. What is interesting to note is that even though more processing resources were allocated to inverted pyramid style stories, recognition for story details in the inverted pyramid style stories was poorer than recognition for narrative style stories. The implication is that stories delivered in inverted pyramid style may require more resources to thoroughly encode details into short term memory than video attached to online news stories written in narrative style (Wise et al., 2008).

Understanding that messages written in a narrative style are more efficiently processed and have been shown to lead to better recognition memory, the present research extends the concept of narrative style message to television ads. If the findings from A. Lang (1989) and Wise et al. (2008) are accurate, it makes sense to use chronological order for television ads: Because ads are presented in 15- and 30-second formats, viewers have little time to process information. The following example illustrates an ad using chronological order:

> You wear black, even a little dandruff shows.

> That's why more people are switching from ordinary dandruff shampoo to Selsun Blue. Doctor recommended for flakes and itch. With aloe and moisturizers for healthier hair and scalp. Make the switch.
>
> Never wear black without the blue. Selsun Blue.

Because chronological order provides the best chance for thorough information processing, it is important to create messages that present first the cause, next the change, and lastly the consequences. Therefore, the following best practice emerges:

BP1: Construct ad copy argument in chronological order.

Message syntax. Media research has demonstrated structural effects in mediated message processing (A. Lang, 2000; Thorson, Reeves, & Schleuder, 1986). In past research studies on structural message features, A. Lang (2000) investigated the effects of structural features of television (e.g., edits, cuts, screen size, and animation) on cognitive processing. Through A. Lang's investigations, multiple structural features have been shown to elicit an automatic orienting response which alters message encoding. Cognitive processing resources have been conceptualized as a limited resource, and A. Lang (2000) has demonstrated that the presence of certain structural features in television messages can lead to an emphasis on message encoding, thereby reducing resource capacity allocated to information storage and retrieval for those messages (Britton et al., 1982; Broadbent, 1958).

Message processing takes time, and because message processing is successive, cognitive processing in one area (such as encoding) will affect cognitive processing in other areas (such as storage and retrieval). Beyond the mere visual structural complexity and the global arousal of the content, syntactic features of written and spoken narratives burden the cognitive processing of television advertising messages (Bradley & Meeds, 2002; Lowrey, 1998; Thorson et al., 1986).

Bradley and Meeds (2002) found that moderate syntactic complexity boosts recognition and positive attitudes because increased complexity may result in more effortful processing. Within limits, complexity enhances encoding because more time is spent during the encoding process. Using grammatical transformations (changes from active to the passive voice and particle movement), Bradley and Meeds investigated the effects of syntactic complexity on readers' comprehension, recognition, recall, and attitudes toward slogans. Their study suggests that using the subject-verb-object format has a cognitive advantage over using the passive voice. For example, using the subject-verb-object format versus the passive voice,

- Subject-verb-object format: Lino played the violin.
- Passive voice: The violin was played by Lino.

the subject-verb-object format is simple syntax and shows an advantage in slogan recognition.

Bradley and Meeds (2002) found that complexity may result in poorer recall and attitude formation. According to Bradley and Meeds, the English language uses standard subject-verb-object ordering, causing readers to expect the object after the verb. In the following passive sentence, since the object is presented first, the reader must expend greater resources to figure out who kicked the ball:

- The ball was kicked by Nico.

Bradley and Meeds (2002) also tested particle-movement transformation. In addition to the cognitive burden caused by using passive voice, particles can be moved within a clause and can also impact how information is processed. In English, for example, the adverb can be moved away from the verb.

- Police quickly raced to the bank robbery scene.

- Police raced to the bank robbery scene quickly.

Processing the adverb placed far from the verb requires more cognitive resources than processing the verb/adverb pair.

Further, Bradley and Meeds (2002) found that syntactic complexity caused cognitive overload and resulted in overly complex slogans being rated unfavorably. Furthermore, highly complex messages negatively affected both recall and persuasiveness of advertising slogans.

Lowrey (1998) also examined the idea of "simple is best." Using two television ads that varied in terms of their syntactic complexity, Lowrey found that to the extent that advertisers are interested in recall and recognition, advertisers should employ simple syntax to maintain higher levels of recall and recognition.

Lowrey (1998) drew on research findings in the psycholinguistics field, noting that syntactic analysis is related to grammatical relations between words. In line with Bradley and Meeds (2002), Lowrey found that particular syntactic structures show reduced comprehensibility of text. Syntactic structures that have been shown to reduce comprehensibility include negative text and passive voice. Conversely, syntactic structures that have shown to increase comprehensibility include affirmative text and subject-verb-object format. Accordingly, negative narrative structures and passive voice can cause cognitive processing difficulties when combined with other factors that place demands on short-term memory (Anderson & Davison, 1988; Lowrey, 1998).

Research has demonstrated that television viewing places a high demand on cognitive resources because it displays constant flowing stimuli for the audience to process (A. Lang, 2000; A. Lang, 2006). In a television ad environment, it becomes even more necessary to follow the rules of subject-verb-object format and affirmative narrative because the entire message must be delivered in a 15 or 30 second period. To lessen the cognitive burden while viewing television ads, copywriters should use the subject-verb-object format to enable the audience to easily determine the subject and the information being conveyed in the message.

For television ads, the present research posits that simple is best. To be most effective, messages should be presented with simple syntax to facilitate best message processing. Both Bradley & Meeds (2002) and Lowrey (1998) used written stimuli where participants had the opportunity to re-read the information being presented. The ability to carefully re-read the information provided participants with the advantage of time to sort out their ideas and assess what the message was trying to convey. Conversely, television ads are either 15 seconds or 30 seconds and traditionally viewers cannot control the speed of the television ad (i.e. stop, pause, rewind). They are therefore not afforded the ability to reassess and decode complex syntax due to television's continuous stream of information and the high demand of message processing. As a result, following the suggestions of Bradley & Meeds (2002) and Lowrey (1989), the following best practice is suggested:

BP2: Use simple syntax in advertising copy.

Concrete words and images. Concrete words and images have a bearing on how messages are processed. Using Paivio, Yuille, and Madigan's (1968) definition, concreteness embeds the concept of sensory experience, and is "any word that refers to objects, materials, or persons" (p. 5). In contrast, abstractness is "any word that refers to an abstract concept that cannot be experienced by the senses" (p. 5). Concrete words and images have the ability to induce mental representations that mimic cognitive responses to actual objects, materials, or persons resulting in an actual sensory experience (David, 1998; Paivio et al., 1968). Scholars recommend using concrete words and images because concreteness has inherent imagistic elements that can evoke mental images (Shapiro, 1986; David, 1998; A. Lang, 1995). Using concrete words and images demand fewer resources to process and are easier for the viewer to remember – enhancing memory for the substance of the message (Bolls, 2000; Bolls & Lang, 2003; David, 1998).

David (1998) conducted an experiment on news concreteness and audio/visual association. The prediction was that a news item presented with a representative picture would stand a better chance of dual coding (activation of visual and verbal processing subsystems) and therefore have a better chance of being remembered than news items without a picture. In addition, David predicted that concrete narrative would have better recall than abstract narrative. Participants were presented data cards that contained information with varying levels of concreteness. For example, most concrete cards contained paired items such as the word *camcorder* and a picture of a camcorder, and abstract cards contained paired items such as the words *g-force research* and a picture of a roller coaster. Following a distraction exercise, participants were required to recall as many benefits as they could from the data cards. Results from David's study demonstrated that concrete news item pairs were better recalled than abstract item pairs. According to David, the addition of related pictures to concrete stories created an interaction that supports the argument that news concreteness is consequential and provides positive reinforcement in audio/visual association.

Bolls and A. Lang (2003) examined how the level of imagery in radio advertisements affected the allocation of cognitive resources to encoding these messages in memory. In this study, participants listened to radio ads that had been coded as either high-imagery or low-imagery. During exposure to stimuli, secondary task response times were collected for messages within each level of imagery. Participant self-report data also were collected. Secondary task response time was faster during exposure to the high-imagery messages. In addition, self-reported involvement was greater for high-imagery messages. Their results suggest that more controlled cognitive resources are applied to encoding high-imagery radio messages than may be required by the message. An alternative explanation is that high-imagery radio messages require fewer cognitive resources to process. Consider that high-imagery messages inspire visualization of a message. Since visual processing is automatic, there is less demand for processing resources. The impact of high-imagery audio messages is an important finding because, in the absence of visual images, it accounts for the efficiency of encoding. When controlled resource allocation combines with automatic resource allocation, there is likely to be an abundance of resources available for cognitive tasks such as storage and concurrent retrieval, resulting in more thorough information processing (Bolls & Lang, 2003).

According to the literature, concrete words and product-related images should be included in television ads. Given the studies covered, the following best practices emerge:

BP3: Use concrete words in advertising copy.

BP4: Use images of the product/service in ads.

Audio/Video Redundancy. Television information that conveys the same message in the audio and visual tracks is said to have audio/video redundancy. A. Lang (1995) suggested that redundant presentations are better processed in all three cognitive subprocesses – encoding, storage, and retrieval – resulting in increased memory for message information. How well the audio and video elements correspond is a major factor in determining how resources are allocated to process a message, influencing the level of message comprehension (Drew & Grimes, 1987; A. Lang et al., 2003). Research has also demonstrated that visual processing requires less resource capacity than audio processing and that when the audio and visual information do not correspond, audio and visual memory will suffer, with audio memory suffering the most (Brosius, 1989; Drew & Grimes, 1987; Grimes, 1991; A. Lang, 1995; A. Lang et al., 1999).

Fox (2004) investigated audio and video redundancy using signal detection methods and found a significant memory advantage for information in the audio/visual redundant condition. Fox compared memories for television news stories between audio and video messages that were redundant and television news stories when those stories were dissonant. Signal detection allowed for examination of memory judgments and memory strength in the various viewing conditions. Understanding that audio/visual redundancy leads to improved memory strength, the current research extends the concept of audio/visual redundancy to television ads. Continuing with the idea that ads are presented in 15- or 30-second formats, it is imperative to provide the best chance for ad information to be processed. Using audio/visual redundancy is another factor that increases the opportunity for ad information to be more thoroughly processed. Given the studies covered, the following best practice is suggested:

BP5: Ads should match audio and visual information.

Other LC4MP predictions

While LC4MP predicts that the best practices for message processing are structuring messages chronologically, using simple syntax, using concrete words and images, and matching audio and visual presentations, LC4MP also predicts that structural complexity will influence how well messages are processed. Messages may contain elements such as orienting eliciting features or arousing content that cause the viewer to automatically allocate resources to the subprocess of encoding. If this happens, resources may be stolen away from the subprocesses of storage and concurrent retrieval and message processing may be impacted. Because messages vary in terms of structural complexity, LC4MP predicts that some messages benefit from automatic calls to encoding while others suffer at higher calls to encoding. Based on the context of an ad, there is a set of recommended best practices for message structural complexity.

Message structural complexity

In the early limited capacity literature, “pacing” was the term used to describe structural complexity. Pacing referred to how many camera changes (cuts or edits) occur within a message. A cut was defined as a shift from one visual scene to a completely different visual scene (A. Lang, Bolls et al., 1999). For example, a scene shows a man driving home from work, and the next scene shows him sitting in his living room. In this example, the visual scene completely changes and early iterations of the theory assumed that the viewer incurred a greater cognitive load because the viewer needed to use cognitive resources to reorient to the information being presented. An edit, on the other hand, was defined as a shift from one perspective of a visual scene to another perspective of the same scene (A. Lang, Bolls et al., 1999). Change in perspective includes camera changes (such as switching from a long shot to a close up) and creating visuals effects that the human eye cannot make.

Operationally, messages coded for cuts were defined as fast-paced messages if they contained 10 or more scene changes in a 30 second message, medium paced messages contained 5 – 6 cuts in a 30 second message, and slow paced messages contained 0 – 1 cuts (A. Lang, Bolls et al., 1999). For edits, four speeds of messages were identified by A. Lang, Zhou et al. (2000) – very fast, fast, medium, and slow paced. Very fast paced messages contained 24 or more camera changes in a 60 second message, fast paced messages contained 16 – 23 camera changes in a 60 second message, medium paced messages contained 8 – 15 camera changes in a 60 second message, and slow paced messages contained 0 – 7 camera changes in a 60 second message (A. Lang, Zhou, Schwartz, Bolls, and Potter, 2000). Converted to 30 seconds to ease comparison between cuts and edits, very fast, fast, medium, and slow paced edits are 12 or more, 8 – 11, 4 – 7, and 0 – 3, respectively.

Originally, limited capacity research held that an edit demanded less cognitive processing because the visual information in the scene was relatively the same, so a viewer did not need to use extreme amounts of cognitive resources to process the information. However, anomalies occurred during message experiments involving cuts and edits. As a result, a more precise measurement known as "Information Introduced"—or I-squared—was conceptualized and operationalized (A. Lang et al, 2006).

I-squared begins with the concept of an orienting eliciting structural feature (OESF), which is the list of things that previous research has shown causes television viewers to orient to the message. Features shown to elicit orienting include: graphics onset, music onset, lens distortion, camera change, and visual changes such as moving from color to black-and-white (A. Lang, Bolls et al., 1999; A. Lang et al., 2006; Thorson, Reeves, & Schleuder, 1985). Findings from the work done on I-squared operates on the local level (A. Lang et al., 2006) and suggest that when designing television ad messages, producers should evaluate message complexity levels. Another way of examining message complexity is by measuring information density per structural feature—that is, the average amount of information introduced with each structural feature. This concept, not measured before, takes into consideration the overall local complexity presented in each structural feature. Structural complexity (the number of camera changes) must also be considered when designing a television ad because it engages automatic processing as well.

Structural complexity relates to the number of automatic orienting eliciting structural features (OESFs) used in a message. Increasing the number of automatic OESFs used during a single message increases the structural complexity of the message (A. Lang et al., 2006). Encoding information presented immediately following an OESF is dependent upon the overall informational demands of the message (Fox, Lang, Chung, Lee, & Potter, 2004; A. Lang, 2006; Thorson & Lang, 1992). In other words, when the message itself is complex (requiring many resources), the encoding that occurs as a result of an orienting response will always occur—it is an automatic process. However, due to the high resource demands of a complex message, automatic calls for orienting will take resources away from the other subprocesses—storage and retrieval—which will result in the message to be processed less fully (A. Lang, 2006). Put yet another way, complex messages require maximum levels of cognitive resources to fully process. Based on the assumption that there is a dynamic process occurring between the human-motivated information processing system and the media message being communicated, producers should be aware of the ad's information density per structural feature when introducing creative elements into a television ad. If additional message stimuli are introduced that call for an automatic response, then there will be few to no cognitive resources left to respond to the call to store information. Since orienting responses are automatic, when the cognitive system is stressed, resources will be stolen from subprocesses that are not controlled—from storage and concurrent retrieval. As a result, when message content is simple, there is less strain on cognitive resources, so more orienting eliciting structural features can be processed without reducing the subprocessing in storage or concurrent retrieval (A. Lang, 2006).

According to theory, the best practice to achieve attention and recognition is to employ particular combinations of structural features (A. Lang, 2006). In earlier studies, two important structural features were cuts and edits (A. Lang et al., 1999; A. Lang, Chung, Lee, Schwartz, & Shin, 2005; A. Lang, Potter, et al., 1999; A. Lang, Schwartz, Chung, & Lee, 2004). However, more recent studies suggest that I-squared and OESF levels combine to affect the attention and encoding potential of a message.

Cognitive Cost and Overload

According to LC4MP, the three subprocesses—encoding, storage, and retrieval—occur simultaneously and continuously (A. Lang, 2006). "Aspects of the individual's goals, the message content, and the message structure are continuously resulting in automatic and controlled allocation and reallocation of resources to encoding, storage, and retrieval" (A. Lang, 2006, p. S61). This processing calls for resources that are independently pulled from a fixed pool of limited resources (Basil, 1994; A. Lang, Bolls, Potter, & Kawahara, 1999). When message processing requirements and the viewer's goals combine, and more resources are called for than there are, cognitive overload occurs (A. Lang, 2006). According to A. Lang (2006), cognitive overload means that there are insufficient resources available to fully support all three subprocesses. When this occurs, processing performance is deteriorated in one, two, or all three subprocesses, rendering insufficient resources for message processing. According to LC4MP, resource division is influenced by the time demands of the message. For example, if the viewer cannot control the speed of the message (i.e. pausing, stopping, rewinding), "then time-sensitive subprocesses (like encoding and to some extent concurrent retrieval) will automatically receive more resources and storage will be shorted" (A. Lang, 2006, p. S61). When this happens, a message is attended (all resources are allocated), but encoding is negatively impacted resulting in a reduction in recognition memory, and the message will not be able to be retrieved because it is poorly stored (A. Lang & Basil, 1998; A. Lang, Park, Sanders-Jackson, Wilson, & Wang, 2007).

Now, because each OESF (by definition) results in an orienting response, it causes the viewer to automatically allocate resources to the encoding subprocess. In doing so, it may take resources away from the subprocess of storage and concurrent retrieval as the ad is pushing the viewer close to cognitive overload.

In order to derive a best practice concerning the use of structural complexity, one other factor—message complexity—needs to be reviewed.

Message Complexity

A. Lang et al. (2006) used secondary task reaction times to evaluate the change in response times between messages with cuts and messages with edits. The prediction was that as the pacing increased, response time to messages with cuts would increase; and as pacing increased, response time to messages with edits would decrease. In fact, the prediction was not substantiated by the experiment results—the opposite was found. As pacing increased, response time for messages with cuts decreased and response time for messages with edits increased. The results did not indicate the presence of cognitive overload as theory predicted, so the researchers presumed that the conceptualization of cuts/edits must be responsible for the cognitive processing and causing the unexpected results in response times (A. Lang et al., 2006).

As mentioned, in earlier LC4MP work, the relative amount of message complexity was conceptualized with the constructs "cuts" and "edits." However, these concepts were not very precise. As an illustration, the following examples demonstrate a situation where an edit might place less of a cognitive load on a viewer than a cut.

Examples of cuts:

Example 1) An ad for a brand of beer could show a beer and then change the scene to a group of guys sitting in a room enjoying the beer.

Example 2) An ad for the same brand of beer could show a beer and then change the scene to a group of guys enjoying a beer while sitting in a room with several sexy ladies utilizing lively background music with graphics added at the bottom of the screen.

Both examples are by definition "cuts" but the information introduced with Example 2 would engage more cognitive processing and have a greater cognitive burden on message encoding, storage, and retrieval. Example 2 would further increase the cognitive load because people are automatically aroused by sex, and adding sexy females triggers this emotional response.

Examples of edits:

Example 1) An ad for a dizziness remedy shows a woman looking down a staircase. Next, the camera changes to show the staircase from her point of view, indicating that she is afraid to navigate down the stairs for fear of losing her balance, so she remains where she is.

Example 2) An ad for the same dizziness remedy shows a woman looking down a staircase. Next, the camera changes to show the staircase from her point of view, indicating that she is afraid to navigate down the stairs for fear of losing her balance. Only this time, the camera changes to show that from the woman's point of view, her focus goes in and out, the staircase is shown expanding and shortening, and then the staircase spirals. Also, strange sound effects are added to emphasize the feeling of dizziness.

Both examples qualify as edits, however, the increase of information introduced in Example 2 would have a greater cognitive cost. The greater complexity in Example 2 would engage automatic orienting responses and, in fact, may result in a greater cognitive burden than a simple cut. The combination of complexity employed effects how well information is processed, whether the visual change is a cut or an edit.

Recall that cuts were expected to be more difficult to process than edits, so cuts should require more cognitive resources than edits. In the above examples, comparing Edit Example 2 to Cut Example 1, the edit message containing multiple structural features more accurately accounts for greater cognitive resource requirements than Cut Example 1.

More recent studies have refined the view about the amount of processing resources required by a transition from one visual scene to another (A. Lang, 2006; A. Lang, Bradley, Park, Shin, & Chung, 2006; Kurita, Lang, Potter, Park, Sparks, Shyu et al., 2006; A. Lang et al., 2007). This new measure, called “I-squared,” for information introduced, accurately accounted for the data in A. Lang et al. (2006). Given the studies covered, the following argument emerges:

> BP6: Ads with high information density per structural feature should use fewer orienting eliciting structural features than ads with low information density per structural feature.

Product Tangibility. Concrete words and images of concrete products are less cognitively taxing than abstract words and images. Concrete words and images of tangible items represent items that can be experienced through the senses. Paivio, Walsh, and Bons (1994) examined the effects of concreteness and relatedness of noun pairs on free recall, cued recall, and memory integration. In this investigation, Paivio et al. made two predictions: (1) associative relatedness and pair concreteness would have independent and additive effects in both cued recall and free recall, and (2) integrative memory effects would occur for both abstract and concrete related pairs; but because imagery is more available as a potential integrative mechanism for concrete than abstract words, integrative memory would be stronger for concrete/unrelated pairs than abstract/unrelated pairs. In the experiment, participants were instructed to read 32 pairs of words. Then, some were told to write as many words as they could recall from the list, while others were provided cues and instructed to recall the appropriate responses. Results indicated that recall was better under cued recall than under free recall, recall was better for concrete items than for abstract items, and recall was better for related pairs than for unrelated pairs. Further, their findings supported significant main effects on concreteness and relatedness, but no interaction between the two variables in the free recall or cued recall conditions. Paivio et al. results suggest that imagery was sufficient to ensure integrative recall, cued recall, and free recall, providing strong support that concrete content had higher recall results than abstract content.

The present research extends the concept of concreteness/tangibility to television ads. The idea is that advertised services (such as life insurance or investment services) are abstract and intangible because they cannot be experienced by the senses. When the viewer is required to imagine the benefits of the service, the viewer's cognitive requirement is increased, thereby increasing cognitive resources required to process the ad. Conversely, when tangible products are advertised (such as a McDonald's Big Mac or a Sealy mattress) fewer cognitive resources are required to process the information. Furthermore, as demonstrated by Paivio et al. (1968) and explained in BP5, cognitive savings are increased when the concrete words of the ad copy match the image of the tangible products.

This leads to the next best practice:

> BP7: Ads for intangible items/services should use fewer orienting eliciting structural features than ads for tangible items/services.

Brand favorability. Research by Bradley and Maxian (2008) investigated the impact of brand favorability on viewer attention. They predicted that the most-loved brands would automatically trigger increased arousal due to the emotional reaction associated with the brand compared to brands for which consumers did not hold special affinity. Results from self-report data indicated that participants rated most-loved brands as more arousing than ads matched for product category but representing mundane brands.

Interestingly, physiological data reported by Bradley and Maxian (2008) indicated that most-loved brands led to a sustained decelerated heart rate across a 6-second viewing period, suggesting greater cognitive effort applied to processing, “whereas the participants quickly became disinterested with the least-loved brands” (Bradley & Maxian, 2008, p. 17). Though physiological data did not support greater levels of arousal to most-loved brands, participants clearly perceived their most loved brands to be more arousing (Bradley & Maxian, 2008). Given the study covered, the following argument emerges:

> BP8: Ads for loved brands should use fewer orienting eliciting structural features than ads for mundane brands.

Sexual imagery. A. Lang (2005) and Reeves and Nass (2002) conducted extensive research on physiological responses to mediated stimuli and found that the human brain evolves very slowly so it reacts to stimuli in the 21st century much the same way it did in the 9th century B.C.. Scholars argue that the human brain developed in order to deal with real world phenomena and that the brain changes very slowly. Most importantly, the human brain pursues goals related to living, among which is reproduction. The primitive nervous system influences behaviors designed to sustain the physical body, and is often conceptualized as a basic motivational system. The literature refers to this motivational system as the approach system. The purpose of the approach system is to sustain the individual organism and the species—to search for opportunities to procreate (Cacioppo & Gardener, 1999; Cacioppo, Gardener, & Bernston, 1999; A. Lang, 2005).

In order to ensure survival, individuals must not only be motivated to search for mates but individuals must secure fit mates. A growing number of scholars argue that many fitness-related traits remain genetic, and that sexual cues indicate these genetic trait values (Miller, 1997; Miller & Todd, 1995; Thornhill et al., 1996). Research on facial and bodily symmetry suggests that bilateral symmetry influences sexual attractiveness, is genetically transferred, and provides a good indicator of health, disease resistance, and overall fitness—all of which helps ensure that an individual's genes survive to the next generation (Møller & Thornhill, 1998; Møller & Thornhill, 1997; Møller, 1997; Thornhill & Møller, 1997). Symmetry reveals a healthy body and good genes (Møller & Swaddle, 1997).

Further evidence to symmetry is found in research by Langlois, Roggmann, and Reiser-Danner (1990). Langlois et al. demonstrated that human infants (as young as 6 months old) gazed longer at facial images that were more beautiful in terms of symmetry. Langlois et al. argued that the infants were too young developmentally to have been socialized into preferring more beautiful faces, thus indicating an innate aesthetic response to beautiful faces.

Saad (2007) applyied Darwinian principles to account for human consumption patterns as well as the products that most appeal to consumers. Saad's analysis found that advertising images contain universally recurring themes depicting masculinity and femininity. These themes are not due to socialization forces and/or to patriarcal whims, but rather are due to sex-specific cues and images that are rooted in universal sex-specific mating preferences (Saad, 2007). Well documented sexual cues that have demonstrated universal patterns across different individuals and cultures include height, intelligence, facial averageness, kindness, scent, male jaw size, female waist-to-hip ratio, and political status (Miller & Todd, 1998; Symons, 1995; Thornhill & Gangestad, 1996). Operating under the assumption that the underlying function of mate selection is reproductive success, evolutionary psychologists have proposed that men should seek young, fertile women, and women should seek high status, resourceful men (Buss & Barnes, 1986; Buss & Schmitt, 1993; Miller et al., 1998). Given the studies covered, and recalling that the human brain changes very slowly, the following argument emerges:

> BP9: Ads that use physical sexual imagery should use fewer orienting eliciting structural features than ads that do not use sexual imagery.

Images of fatty or sweet food. In addition to mating, sustenance requirements must also be met in order to sustain life. Theories presented by A. Lang (2005), Cacioppo and Gardener (1999), and Cacioppo, Gardener et al. (1999) on evolutionary responses to environmental stimuli also apply to sustenance.

The most recurring and enduring challenge for most organisms is meeting the caloric requirements for survival (Saad, 2007). Accordingly, evolutionary psychologists have identified several phenomena that are adaptations to this specific survival problem. For example, the taste preferences of most individuals display a strong desire for fatty and sweet foods. Saad explains that these foods are preferred because they are loaded with calories, therefore addressing the evolutionary survival problem of caloric scarcity and uncertainty.

Historically, it makes sense that individuals preferred high caloric foods and gorged on fatty and sweet foods both helped overcome caloric uncertainty and scarcity caused by lack of food storage facilities and supermarkets (Burnham & Phellan, 2000). Based on evolutionary adaptations, individuals would be expected to exhibit higher levels of arousal when presented a grilled steak than when offered steamed broccoli. Similarly, most individuals should demonstrate a distinct preference for sweet baked goods compared to dried fruits.

A. Lang (2005) argues that motivational stimuli that are evolutionarily relevant elicit arousal in organisms and increase activation in encoding, storage, and retrieval. Items in the environment that are motivationally salient (sex, food) are theorized to elicit motivational activation and are encoded into mental representations over items that are less salient (grass seed, picture frames) (A. Lang, 2005). During appetitive activation, the cognitive set of an individual is in the mode of information intake. As appetitive activation increases, resources allocated to encoding should also continue to increase resulting in a positive relationship between appetitive activation and resources allocated to encoding (A. Lang, 2005). Further, A. Lang argues that motivational activation affects storage. It makes sense to remember motivationally relevant stimuli in order to find them again if they are positive or avoid them if they are negative. Similarly, the storage of a successful response to a stimulus will enable that response to be used again. LC4MP posits that motivationally relevant stimuli elicit an automatic allocation of resources to storage, and motivational activation automatically allocates additional resources to retrieval, which leads to increased competition for cognitive resources (A. Lang, 2005). By engaging all three of the major cognitive subprocesses—encoding, storage, and retrieval—the cognitive cost to the viewer will be higher when fatty or sweet foods and/or sexual images are presented. Given the studies covered, and recalling the slow evolutionary change in human brain reaction to stimuli such as high caloric food imagery the following argument emerges:

> BP10: Ads that use fatty or sweet food imagery should use fewer orienting eliciting structural features than ads that do not use fatty or sweet food imagery.

Best practices 1 through 10 combine to create a recipe to use for producing television ads that gain and keep viewer attention while providing the best opportunity for optimal information processing. To evaluate how well ad producers employ these concepts the following research question is presented:

> ***Research Question:*** To what extent do contemporary television advertisers follow the ten best practices suggested by LC4MP?

Table 2-1: Summary of Best Practices

BP1: Construct ad copy in chronological order.

BP2: Use simple syntax in advertising copy.

BP3: Use product-related nouns in advertising copy.

BP4: Use images of the product or service in ads.

BP5: Ads should match audio and visual information.

BP6: Ads with high information density per structural feature should use fewer orienting eliciting structural features than ads with low information density per structural feature.

BP7: Ads for intangible items/services should use fewer orienting eliciting structural features than ads for tangible items/services.

BP8: Ads for loved brands should use fewer orienting eliciting structural features than ads for other than loved brands.

BP9: Ads that use sexual imagery should use fewer orienting eliciting structural features than ads that do not use sexual imagery.

BP10: Ads that use fatty or sweet food imagery should use fewer orienting eliciting structural features than ads that do not use fatty or sweet food imagery.

CHAPTER 3

Methods

This dissertation employs content analysis procedures in order to examine the extent to which advertisements follow theoretically-based best practices suggested by the Limited Capacity Model of Motivated Mediated Message Processing (A. Lang, 2006). This chapter presents a description of the content analysis procedures and the variables coded. This includes relevant information regarding sampling, data collection procedures, determination of intercoder reliability estimates, and data analysis strategies.

Sample

In order to obtain a representative sample of advertisements for coding, a composite day sampling technique was used, modeled after the procedure used by Gantz, Schwartz, Angelini, and Rideout (2008). Indeed, the sample for the current study represents a subset of Gantz et al.'s 2005 dataset. Gantz et al. generated a composite week of programming and non-programming content from broadcast and cable networks spanning a 10-week period. The composite sample from 10 broadcast and cable networks—in seven major markets—was used to create one full week of programming and non-programming (such as advertisements, public service announcements, and station identification) content. Each day of the composite week was divided into eight, 3-hour blocks. A grid with 56 slots (one for each 3-hour block in the 7-day period) was used to begin sampling for each network. Gantz et al. next filled each 3-hour block across the entire week with sampled markets using random sampling without replacement until every day of the week was filled. Since the study included seven markets, each market was represented once during every 3-hour block. Researchers repeated this process for each

3-hour block. Working grid by grid, once a week's grid for a channel was filled with markets, investigators returned to each 3-hour block and sampled the week in which content would be recorded, again using random sampling without replacement. They repeated these procedures for each network. When the sampling process was complete, researchers had filled 10 grids, one for each network (Gantz et al., 2008).

For the current project, a composite day was deemed sufficient because examining one composite day made it possible to detect overall patterns in the television ad structures as well as ascertain any significant variations from best practices suggested by theory. Specifically, by examining ads sampled from each of the 24 hours in a day, ads designed to target specific audiences and air during specific dayparts were represented. For example, ads targeting homemakers are typically aired during weekday mornings and afternoons. Ads targeting men are typically aired during weekend afternoons when sports are aired. The evening prime time daypart has an audience that is more evenly distributed, leading to ads that target a more general market (Craig, 1992; Webster, Phalen, & Lichty, 2000). Further, ad schedules often include substantial repetition. One composite day is sufficient to capture a representative sample of ads for the 3-month period included in this study because ads aired in one day are likely to reflect ads aired earlier or later in the season (Gantz et al., 2008).

This sample excluded ads targeting children because the 10 recommended best practices focused on an audience aged 18 to 49. Cues for identifying ads that target children were the use of animation geared to children, the use of central actors appearing to be under the age of 18, and ads suggesting that kids get their parents' permission before acting. This study also excluded public service announcements and infomercials.

The composite day of television ads was drawn from four major broadcast television networks—ABC, NBC, CBS, and Fox. These networks were selected because, according to ratings research, they were the most watched networks at this time and they represented strategic ad targeting to audiences 18 – 49 years of age (Nielsen, 2008). The composite day was broken into 24 1-hour blocks (see Appendix A). Each of the broadcast networks filled six of those 1-hour blocks. For each 1-hour block, one of the broadcast networks was selected using random sampling procedures without replacement. After the networks were selected, one day during the three-month period of analysis was randomly selected to fill each of the time blocks from midnight to 11:59 pm. Television ads aired for each network and time slot constituted the sample for analysis. This procedure resulted in 619 television ads included in this analysis.

The sample contained 523 unique ads, adequate for observing patterns of advertising practices (Bordens & Abbott, 2005). The length of the ads ranged from 10 seconds to 120 seconds, and the average length was 27 seconds. The majority of ads (67.7%) were 30-second ads.

Measurement of the Variables

This dissertation used the ad as the unit of analysis although various units of observation were used across the variables included in the study. Units of observation included the word, the sentence, the scene, the OESF, and the ad. For example, when the variable of interest was concrete word usage, the unit of observation was the word. Alternatively, when the variable of interest was structural complexity, the unit of observation was the camera change. A transcript of every ad was created in order to measure chronological order, use of simple syntax, and use of concrete words. (See Appendix B for the code book.)

It is important to note that much of this investigation is exploratory as there was little or no existing empirical evidence on which to base measurement procedures. This dissertation was designed to establish benchmarks and begin dialog in previously unexplored areas.

Chronological order. Influenced by work conducted by A. Lang (1989), chronological order was conceptually defined as messages that: (1) first presented the problem, next the change, and lastly the consequences; or (2) first provided a description of the product, next explained how to use the product, and lastly described results from using the product; or (3) first provided a description of the benefit to the viewer, next explained how it has improved, and lastly described results from using the product.

Example 1: Some crook went dumpster-diving and stole your identity. Now it can take you years of hard work to get it back. Unless your home insurance includes Allstate's new identity restoration coverage. Then a dedicated team will make the phone calls, fill out the forms, help restore your credit rating. You can't always prevent identity theft, but you can protect yourself. That's Allstate's stand. Are you in good hands?

Example 2: The new digital Rebel XT. An 8 mega pixel, easy to use SLR. Virtually no delay when you snap the picture and with the ability to shoot at 3 frames per second, you never miss the opportunity go catch the impossible. The next generation digital Rebel XT. Official camera of the NFL and future NFL players everywhere.

Example 3: New Promise Buttery Spread. Helps maintain a healthy heart when eaten instead of butter or margarine. And now it's rich with heart health essentials like omega 3 and vitamins B6, and 12. Plus there's no trans fat and lots of creamy buttery taste. In fact, it's our healthiest and tastiest buttery spread yet. No wonder hearts are beating louder. New Promise Butter Spread. Taking your health to heart.

Use of simple syntax. Using work by Bradley and Meeds (2002), simple syntax was conceptually defined as sentence structure using standard subject-verb-object ordering.

Example: Lino played the piano.

Example of non-simple syntax: The car was driven by Luca.

The sentence was the unit of observation for syntax complexity. Each sentence was counted from the transcript of the ad copy. The total number of sentences using subject-verb-object ordering was divided by the total count of declarative sentences with 3 or more words to establish a use of simple syntax ratio for each ad.

Concrete words. Using work done by Paivio, Yuille, and Madigan (1968), a concrete word was conceptually defined as a word that embeds the concept of sensory experience such as sight, sound, smell, taste, or touch. Operationally, concrete words were defined as *product-related nouns* that embed the concept of sensory experience and refer to the product being advertised. Superimposed graphic content was not included.

Example of concrete words: If an ad is about a coffee shop, nouns such as cup, coffee, and bean would count as product –related nouns.

Example of abstract words: If an ad is about a coffee shop, words that describe the scent such as *it smells great* or *it smells wonderful* would NOT count as concrete words. In this example, *great* and *wonderful* are abstract because they do not specifically refer to the scent's characteristic.

The unit of observation for concrete words was the word. Using the transcript from the ad copy, each word in the ad was counted and each concrete word was counted. The total product-related concrete noun count was divided by the total ad product-related word count to establish a concrete word to total product-related word ratio for each ad.

Use of visual images that show the product or service. Using work done by David (1998), visual images that relate to the message was conceptually defined as pictures depicting the advertised item.

Example 1: If an ad is about sport boating, images of a sports boat on or off a body of water must be shown.

Example 2: If an ad is about a drink syrup, images of the syrup, a flavored drink, or of someone drinking the flavored drink must be shown.

Example 3: If an ad is about a product to re-grow hair, images such as the product container, an actor using the product, and/or the effects of using the product, such as a man running his fingers through his newly re-grown hair, must be shown.

Example 4: If an ad is about pest control services, images such as the exterminators spraying for bugs, dead bugs resulting from spraying, or people picnicking in their yard while enjoying a pest-free environment must be shown.

Example of not using an image of the product or service: If an ad is for a car and there is no image of the car in the ad.

The unit of observation for visual images that relate to the product or service was the ad. If the ad showed the product or service being advertised, it was evaluated as using a visual image, no matter how long the image lasted. According to Reeves and Nass (2002), video appearing in one frame (33 milliseconds) was long enough to invoke priming effects among experiment participants. Though priming effects were observed, the viewer was unable to distinguish the content of what appeared in the video of one frame; video presented in one frame only appears to be a flash of light to the viewer—not an actual item. It is illegal for broadcasters to use subliminal priming, so images of any length appearing in an ad will meet this threshold (Reeves & Nass, 2002).

Matched audio and visual information. Using work done by Zhou (2005), matched audio/visual information was conceptually defined as information that conveys the same message in the audio and visual tracks. In order for audio and visual information to be considered a match, a matching image had to be presented within the duration of the same information presented in the narrative. Whenever an image (picture) appeared during a narrative and the image matched the narrative description, it was considered audio/visual matching. The match did not have to occur throughout the scene.

Example 1: For an ad about selling a convertible car, an image of a convertible car must be present at some point during the narrative description of the convertible car.

Example 2: For an ad about cleaning services, text of the company name and/or services provided or video of the services being performed must appear during the narrative description of the services.

Example 3: For an ad promoting dog food, the ad would have to show a dog, or a bag of dog food, or a bowl of dog food during the narrative segment.

Example 4: For an ad promoting baby diapers, a diaper or a baby in a diaper would have to be shown during a narrative segment.

The unit of observation for matched audio and visual information was the scene. Matched information was measured by counting each scene in which a redundant narrative and visual image was present (Fox, 2004). This sum was divided by the total number of scenes in the ad to determine a ratio of matched audio and visual information used in each ad.

Structural complexity. Using work done by A. Lang et al. (2006) and Potter, Lang, & Bolls (2008), structural complexity was conceptually defined as the number of automatic orienting eliciting structural features (OESFs) used in a message. Increasing the number of automatic OESFs used during a single message increases the structural complexity of the message.

Example 1: A 30-second ad opens with a seemingly real newscast showing an imminent natural disaster that details self-protective measures together with bad weather sound effects. After a camera change, there suddenly is a video of an actor (same voice) offering insurance and background sound changes to music. The next camera change shows an animated family driving safely down a road accompanied by a sound effect of the car zooming along. This ad is not structurally complex because there are only two camera changes and two sound changes (four OESFs) in a 30-second ad.

Example 2: A 30-second ad opens with a medium shot of a box of cereal, and after a camera change, the box of cereal is on a table, along with two people eating the cereal. Music is in the background, along with sound effects of cereal pouring out of the box and cereal being crunched. The next series of 26 audio and visual OESFs alternate between the box of cereal and the people eating cereal. This ad is structurally complex because there are 30 audio and visual OESFs.

The unit of observation for structural complexity was the OESF. Structural complexity was measured by counting the number of OESFs (audio and visual) and dividing that sum by the number of seconds in the ad.

Information density per structural feature. Because an OESF must occur in order to have information introduced, OESFs/sec must vary directly with I-squared/sec. In order to account for the amount of complexity introduced with each structural feature, a new measure had to be created. Conceptually, information density per structural feature was defined as the information density of the scene. Information density per structural feature was operationally defined as the level of visual and audio information introduced in an ad divided by the ad's OESF/sec score. Visual complexity is calculated by the visual information introduced (I-squared/sec) calculation based on a formula developed by A. Lang et al. (2006), which (1) counts the dimensions of visual information introduced (emotion change, new central object, unrelated information, object change, distance change, perspective change, or form change) in each camera change of a given ad; (2) sums the dimensions for each camera change in that given ad; and (3) divides the sum of dimensions by the total number of seconds in the ad to render an I-squared/sec score. Audio I-squared/sec calculation is based on a formula developed by Potter, Wang, Sanders-Jackson, Kurita, and Lang (2005). The audio I-squared calculation (1) records the audio OESFs following the initial audio onset in a given ad; (2) evaluates and assigns the OESF to a dimension (new, unrelated, form change, emotion, or emotion change) of audio I-squared; (3) sums the dimensions of audio I-squared for that given ad; and (4) divides the sum of dimensions by the total number of seconds in that given ad to create an audio I-squared/sec score for the ad.

Using the same examples presented for structural complexity, Example 1 describes an ad using high information density per structural feature and Example 2 describes an ad using low information density per structural feature .

Example 1: A 30-second ad opens with a seemingly real newscast showing an imminent natural disaster and, in a panicky voice, the announcer details self-protective postures together along with bad weather sound effects. After a camera change, there suddenly is a video of an actor (different voice) offering insurance and background sound changes to music. The next camera change shows an animated family driving safely down a road accompanied by a sound effect of the car zooming along. Since camera changes include visual information that is unrelated or new, as well as object and form changes, and audio changes include emotion changes, new voices, music onsets, and new sound effects, a high amount of information is introduced with each structural change, so the message complexity is high.

Example 2: A 30-second ad opens with a medium shot of a box of cereal, and after a camera change, the box of cereal is on a table, along with two people eating the cereal. Music is in the background, along with sound effects of cereal pouring out of the box and cereal being crunched. The next series of 28 OESFs (audio and visual) alternate between the box of cereal and the people eating cereal. Since the camera changes include the same box of cereal and the same people, and audio changes include repeated sounds, a low amount of information is introduced with each structural change, so the message complexity is low.

The information density per structural featurescore was determined by summing the visual I-squared per second score and the audio I-squared per second score for each ad and then dividing that sum by the OESF/sec score.

Tangibility of the product or service. Using work done by Paivio, Yuille, and Madigan (1968), tangibility was conceptually defined as a product or service that embeds the concept of a sensory experience such as sight, smell, taste, touch, or hearing. Tangible items include: (a) vehicles; (b) food; (c) furniture; (d) appliances; (e) toys; and (f) clothes. Intangible items include: (a) real estate brokerage; (b) insurance policy sales; and (c) investment brokerage. In this study, the unit of observation for tangibility was the ad.

How well brand is loved. According to BusinessWeek (2005a), loved brands were conceptualized as a brand that derive at least a third of its earnings outside its home country, is recognizable outside of its base of customers, has publicly available marketing and financial data, and has a calculated net present value of earnings under that particular brand. Using work done by Bradley and Maxian (2008), loved brands were operationalized as the 100 brands selected from the “Top 100 Brands Scoreboard” (see Appendix C) ("Business Week Online," 2005a).

Because the brands reported on the “Top 100 Brands Scoreboard” were rank ordered, the brands were scaled to distinguish how loved they were. The scale was: 1 = brand is other than loved; 2 = brand ranked 76 – 100; 3 = brand ranked 51 – 75; 4 = brand ranked 26 – 50; and 5 = brand ranked 1 – 25. Brands not appearing on this list were considered other than loved brands for the purposes of this study.

In this study, the unit of observation for brand affinity was the ad.

Sexual imagery. Using work done by Reichert, Lambiase, Morgan, Carstarphen, and Zavoina (2003), sexual imagery was conceptually defined as a healthy, fit body of an adult male or female in any of the following conditions: (a) full nudity; (b) implied nudity; (c) partial nudity; and (d) suggestive clothing.

Measurement for sexual imagery was as follows: (a) full nudity (not wearing clothes); (b) implied nudity (wearing only a towel; appearing to be nude, but in silhouette); (c) partial nudity (wearing only underwear; males with their shirts off; women in bikini bathing suits); and (d) suggestive clothing (open shirts which expose cleavage, tight-fitting clothing which accentuates the body; mini-skirts; short-shorts).

Because there were tiered conditions of sexual imagery, sexual imagery was scaled in order to account for those tiers. The scale was: 1 = sexual imagery not used; 2 = suggestive clothing used; 3 = partial nudity used; 4 = implied nudity used; and 5 = full nudity used.

The unit of observation for sexual imagery was the level of the ad.

Fatty or sweet food imagery. Based on information provided by the USDA (2008), fatty foods were conceptualized as foods that contain a high percentage of fat. Sweet foods were conceptualized foods with a concentration of processed sugar. Using by work done by Saad (2007), fatty foods were operationalized as meats such as beef, lamb, pork, and chicken. Sweet foods were operationalized as sugary foods such as cakes, cookies, ice cream, pies, donuts, and chocolate candy (see Appendix D). The current study also included diet, low fat, and lean varieties of the products just listed as they are likely to evoke fatty or sweet food imagery perception (A. Lang, Bradley, Fitzsimmons, Cuthbert, Scott, et al., 1998).

In this study, the unit of observation for fatty or sweet food imagery was the ad. Fatty or sweet imagery was measured by evaluating whether or not fatty or sweet food imagery was present.

Intercoder reliability:

A critical component of content analysis methodology is to ascertain the degree of reliability of the coding to ensure that coding criteria are consistently applied and not subject to particular biases and/or interpretations of individual coders. Two coders were used to code the materials in this project. To ensure reliability in analysis for this dissertation, both coders participated in 10 hours of rigorous training on coding procedures. Training included a full presentation and discussion of all the coding schemes. During training, coders applied the full range of measures designed for the study, detailed in an elaborate code book of rules. A transcript of each ad was created and the transcripts were used to measure the extent to which chronological order, simple syntax, and concrete words were used. Once training was completed, coders viewed programs, applied the content measures, and coded data.

Intercoder reliability was assessed at three points in time. The first intercoder reliability check was done before coding began. The second and third intercoder reliability checks, were conducted while coding was taking place to ensure that coders remained consistent throughout the coding process. Overall, intercoder agreement was assessed for 12.7 percent of the sample and values for each assessment were at least .80. Agreement values above .80 are considered to represent satisfactory intercoder reliability (LoBiondo-Wood & Haber, 1990; Lombard, Snyder-Duch, & Bracken, 2008; Robson, 2002). Two reliability measures were used: Cohen’s kappa and Pearson’s r (Potter & Levine-

Donnerstein, 1999). Cohen's kappa was used for measuring agreement between binary items. Pearson's r was used for measuring agreement on ratio items.

Variable matching was used to determine the appropriate intercoder reliability test for the following variables: (1) product/service tangibility; (2) loved brand; (3) use of sexual imagery; (4) all sentence count, word count, and scene count variables; (5) all information introduced variables; and (6) all structural features variables. Cohen's kappa was used for dichotomous variables: (1) product/service tangibility; (2) chronological order; and (3) brand affinity; (4) use of sexual imagery; and (5) use of fatty or sweet food imagery. Pearson's r was used for measuring agreement for (1) sentences count variables, word count variables, and scene count variables; (2) information introduced variables; and (3) structural features variables. Intercoder reliability coefficients ranged from 0.80 to 1.00, as shown in Table 3-1.

Table 3-1: Intercoder Reliability.

Best Practice Variable n = 79	Coefficient Measure	Reliability Coefficient
Product or Service Tangibility	Cohen’s kappa	1.00
Use of Chronological Order	Cohen’s kappa	1.00
Total Number of Sentences	Pearson’s r	.99
Total Number of Sentences with 3+ Words and No Questions	Pearson’s r	.99
Total Number of Simple Syntax Sentences	Pearson’s r	.99
Total Number of Words	Pearson’s r	1.00
Total Number of Concrete Words	Pearson’s r	.94
Total Number of Scenes	Pearson’s r	.99
Total Number of Scenes with Matched Audio and Visual	Pearson’s r	.96
Use of Loved Brand Imagery	Cohen’s kappa	1.00
Use of Fatty or Sweet Food Imagery	Cohen’s kappa	1.00
Use of Sexual Imagery	Cohen’s kappa	.93
Visual I-Square Per Second Score	Pearson’s r	.93
Audio I-Square Per Second Score	Pearson’s r	.80
I-square Per Second Score	Pearson’s r	.92
Visual Structural Features Per Second Score	Pearson’s r	.98
Audio Structural Features Per Second Score	Pearson’s r	.97
Structural Features Per Second Score	Pearson’s r	.99

Data analysis

In addition to each of the variables already identified, information recorded for each ad included the DVD identification, ad identification, coder identification, network identification, time of day, and duration of ad (in seconds).

Descriptive statistics were used to determine the extent to which ads used chronological order, simple syntax, concrete words, and matched audio and visual information. Pearson's correlation was conducted on information density per structural feature and OESFs to evaluate the relationship between these two variables. Chronological order, simple syntax, concrete words, and matched audio and visual information also were measured across product or content type (PCT) conditions. PCTs were tangibility, brand affinity, sexual imagery use, and fatty/sweet food imagery use. Chi-square tests were applied to chronological order and ad product or content type (PCT) condition, type of syntax used and ad PCT condition, concrete words and ad PCT condition, and I-squared/sec and OESFs/sec. One-tailed independent samples *t*-tests were used to compare variable means between PCT conditions and syntax used, use of concrete words, matched audio/visual, and OESFs. What follows are the analyses that were completed for each of the variables.

Chronological order. Chronological order was present or not present. The analysis reported the number and proportion of ads that used chronological order based on the PCT condition.

Type of syntax used. Ads used high simple syntax or low simple syntax. This measure contrasted simple syntax sentences to total declarative sentences with 3 or more words. Using chi-square and *t*-tests, the analysis reported the proportion of ads that used high simple syntax based on the PCT condition.

Concrete words. The analysis reported the total number of words, the total number of concrete words, and the percentage of concrete words used in ads. Word counts did not include superimposed graphics. Using *t*-tests, the analysis also compared the proportion of concrete words to product-related words, and the proportion of concrete words to total words in the ads across PCT conditions.

Use of visual images that show the product or service. Product/Service image was present or not present. The analysis reported the number and percentage of ads that used an image of the product/service.

Matched audio/visual. The analysis reported the number and percentage of scenes in each ad using matched audio/visual information. Using *t*-tests, the analysis reported the proportion of matched audio/visual scenes to total scenes in the ads across PCT conditions.

Structural complexity. At the time of this study, the use of OESFs/sec as a combined measure of structural complexity was relatively new. So new, in fact, that there were no published data using the measure as a combined audio and video variable. Therefore, cutoff points for analysis of structural complexity were based upon data gathered from experimental stimuli in a paper presented by Potter, Shyu, Kurita, & Banerjee (2006). Results of this work show the occurrence of overload during structurally-complex messages that were high in information density per structural feature. In Potter et al., messages which were low in structural complexity had .31 OESFs/sec. Messages with high structural complexity had .56 OESFs/sec. Because this measure of OESFs/sec was still experimental, this content analysis also used a median split (.59 OESFs/sec) as an initial benchmark in reporting the percentage of ads with high and low structural complexity. This method provided a more conservative threshold for achieving high structural complexity, and increased the ability to detect compliance with the best practice.

Information density per structural feature. The percentage of information density per structural feature scores was reported. Pearson's correlation and chi-square tests were used to examine the relationship between information density per structural feature and structural complexity. Chi-square tests were used to compare average complexity per OESF and OESFs/sec (1) based on the median, and (2) based on cognitive processing tipping points.

One-tailed independent samples *t*-tests were used to analyze structural complexity based on tangibility, loved brands, sexual imagery, and fatty/sweet food imagery.

Tangibility. Ads were either for tangible products or intangible services. The analysis reported structural complexity differences between ads for tangible products and ads for intangible services.

Loved brands. Due to the low number of ads (n = 68) using any love brand, the scale of loved brands was collapsed into two categories—loved or other than loved. The analysis reported structural complexity differences between ads using loved brands and ads using other than loved brands.

Sexual imagery. Again, due to the low number of ads (n = 72) using any level of sexual imagery, sexual imagery was collapsed into two categories—sexual imagery present or no sexual imagery present. The analysis reported structural complexity differences between ads using sexual imagery and ads not using sexual imagery.

Fatty or sweet food imagery. Fatty or sweet food imagery was present or not present. The analysis reported structural complexity differences between ads using fatty or sweet food imagery and ads not using fatty or sweet food imagery.

Chapter 4

Results

The purpose of this research was to examine the extent to which contemporary television advertising follows practices that maximize audience attention and recognition, as suggested by the Limited Capacity Model for Motivated Mediated Message Processing (A. Lang, 2006).

To maximize effectiveness, television ads should use chronological order, simple syntax, concrete words, images of the product/service, and matched audio/video usage regardless of product or content type (PCT) conditions—PCTs were tangibility, brand affinity, sexual imagery use, and fatty/sweet food imagery use. (Bradley & Meeds, 2002; David, 1998; A. Lang, 1995; Lowrey, 1998; Shapiro, 1986; Thorson et al., 1986). Doing so lessens the cognitive load on viewers and facilitates best message processing thereby enhancing memory for the substance of the ad (Bolls, 2000; Bolls & Lang, 2003; David, 1998). When the PCT condition—intangible products, strong brand affinity, use of sexual imagery, or use of fatty/sweet food imagery—demands automatic processing resources, it is even more beneficial to use chronological order, simple syntax, concrete words, images of the product/service, and matched audio/video.

This chapter provides the results for each of the 10 best practices generated by the LC4MP model.

<u>BP1</u>: Construct ad copy in chronological order.

Eighty-five percent of ads in this study used chronological order, as shown in Table 4-1. This finding is consistent with the best practice recommendation.

Table 4-1. Best Practice 1: Chronological Order

n = 619	Frequency	Percent
Chronological Order Yes	526	85.0
Chronological Order No	93	15.0

Considering the overwhelming use of chronological order in ad copy, and understanding that messages written in chronological order are more efficiently processed and have been shown to lead to better recognition memory, the present research examined how chronological order was employed across PCT conditions. In order to examine this relationship, a chi-square test was applied to chronological order and ad PCT. One significant difference emerged. As shown in Table 4-2, a significant relationship emerged between chronological order and brand affinity ($\chi^2(1) = 15.04$, $p < .0$), where the proportion of chronological order usage for other than loved brands (86.9%) was much higher than chronological order usage for loved brands (69.1%). The relationship was inconsistent with the best practice recommendation. Differences in chronological order usage based on tangibility, sexual imagery usage, and between fatty/sweet food imagery usage were not significant.

Table 4-2. Product and Content Type by Use of Chronological Order

n = 619	Not Chronological Order			Chronological Order			Total
	n	Total%	Product Content Type (PCT)%	n	Total%	Product Content Type (PCT%)	Product Content Type (PCT)
Tangibility[a]							
Intangible	25	4.0	19.4	104	16.8	80.6	129
Tangible	68	11.0	13.9	422	68.2	86.1	490
Brand Affinity[b]							
Loved Brand	21	3.4	30.8	47	7.6	69.1	68
Other Than Loved Brand	72	11.6	13.1	479	77.4	86.9	551
Sexual Imagery Usage[c]							
Sexual Imagery	12	1.9	16.7	60	9.7	83.3	72
NO Sexual Imagery	81	13.1	14.8	466	75.3	85.2	547
Fatty/Sweet Food Imagery Usage[d]							
Fatty/Sweet Food Imagery	9	1.4	11.4	70	11.3	88.6	79
NO Fatty/Sweet Food Imagery	84	13.6	15.6	456	73.7	84.4	540

[a] $\chi^2(1) = 2.42$, $p > .05$
[b] $\chi^2(1) = 15.04$, $p < .01$
[c] $\chi^2(1) = .17$, $p > .05$
[d] $\chi^2(1) = .93$, $p > .05$

BP2: Use simple syntax in advertising copy.

Ads varied in the number of simple syntax sentences they used. In this sample of ads, the number of simple syntax sentences ranged from 0 to 24. The median was 2.00. As shown in Table 4-3, an overwhelming majority (89.5%) of the ads in this study used at least one simple syntax sentence. In order to account for differences in the number of total sentences used in the ads, a new measure—percentage of simple syntax sentences—was calculated. This measure contrasted simple syntax sentences to total declarative sentences with 3 or more words. The percentage of simple syntax sentence usage ranged from 0 to 100%, and the median was 50 percent. For purposes of convenience, the range of percentages was tabulated in 10 percent increments, as shown in Table 4-3. For a majority (59.5%) of the ads in this study, at least 50 percent of the declarative sentences in the ads were simple syntax sentences. One in ten (10.5%) of the ads used no simple syntax sentences.

Table 4-3. Percentage of Simple Syntax Sentences to Declarative Sentences with 3 or More Words

N = 619; Median = 50 percent

Percentage	Frequency	Cumulative Percent
0	65	10.5
10 – 19%	17	2.7
20 – 29%	53	8.5
30 – 39%	60	9.6
40 – 49%	50	8.0
50 – 59%	121	19.5
60 – 69%	90	14.5
70 – 79%	57	9.2
80 – 89%	60	9.6
90 – 99%	5	0.1
100%	41	6.6

This study also examined how simple syntax was employed across different PCT conditions. To examine this relationship, a chi-square test was applied to the proportion of simple syntax usage and the PCT condition. Ads were dichotomized on the median (of simple syntax sentences to total declarative sentences with 3 or more words). Ad scores falling below 51 percent were coded as using low simple syntax; ads with scores equal to or above 51 percent were coded as using high simple syntax.

As shown in Table 4-4, a significant relationship emerged between simple syntax usage and tangibility ($\chi^2(1) = 34.34$, $p < .01$). In ads for intangible products/services, 56.6 percent of the sentences used simple syntax. In ads for tangible products/services, 29.0 percent of the sentences featured simple syntax usage. The relationship was consistent with the best practice recommendation. There was a significant relationship between simple syntax usage and brand affinity ($\chi^2(1) = 6.74$, $p < .01$), where ads for other than loved brands had 36.5 percent simple syntax usage and ads for loved brands had 20.6 percent simple syntax usage. The relationship was not consistent with the best practice recommendation. There was a significant relationship between simple syntax usage and sexual imagery usage ($\chi^2(1) = 3.41$, $p < .01$), where simple syntax usage for ads not using sexual imagery was 36.0 and simple syntax usage for ads using sexual imagery was 25.0. The relationship was inconsistent with the best practice recommendation. The frequency of simple syntax usage did not vary on the basis of food imagery ($\chi^2(1) = 1.89$, $p > .05$, ns).

Table 4-4. Product and Content Type by Simple Syntax Usage

N = 619; Median = .51	Low Simple Syntax			High Simple Syntax			Total
	n	Total%	PCT%	n	Total%	PCT%	PCT
Tangibility[a]							
Intangible	44	7.1	34.1	85	13.7	65.9	129
Tangible	284	45.9	58.0	206	33.3	42.0	490
Brand Affinity[b]							
Loved Brand	52	8.4	76.4	16	2.6	23.6	68
Other Than Loved Brand	276	44.6	50.0	275	44.4	50.0	551
Sexual Imagery Usage[c]							
Sexual Imagery Used	50	8.1	69.4	22	3.6	30.6	72
NO Sexual Imagery	278	44.9	50.8	269	43.4	49.2	547
Fatty/Sweet Food Imagery Usage[d]							
Fatty/Sweet Food Imagery Used	43	7.0	54.4	36	5.8	45.6	79
NO Fatty/Sweet Food Imagery	285	46.0	52.8	255	41.2	47.2	540

[a] $\chi^2(1) = 23.31$, $p < .01$
[b] $\chi^2(1) = 16.91$, $p < .01$
[c] $\chi^2(1) = 8.86$, $p < .05$
[d] $\chi^2(1) = 0.08$, $p > .05$

One-tailed independent samples *t*-tests were conducted to provide additional evidence regarding the relationship between simple syntax usage and the PCT variables. There was a significant effect of tangibility ($t(617) = 4.04$, $p < .01$), where ads for tangible products/services had a higher proportion of simple syntax sentences (M = .5969, SD = .28) than ads for intangible products/services (M =.4868, SD = .27), as shown in Table 4-5. The relationship was not consistent with the best practice recommendation. There was a significant effect of brand affinity ($t(617) = -2.29$, $p < .05$), where ads for other than loved brands had a higher proportion of simple syntax sentences (M = .5187, SD = .28) than ads for loved brands (M =.4374, SD = .23). The relationship was not consistent with the best practice recommendation. There was a significant effect of sexual imagery usage ($t(617) = -2.29$, $p < .05$), where ads without sexual imagery usage had a higher proportion simple syntax sentences (M = .5190, SD = .28) than ads with sexual imagery usage (M =.4395, SD = .27). The relationship was not consistent with the best practice recommendation. There was no significant effect for fatty/sweet food imagery usage ($t(617) = .23$, $p > .05$).

Table 4-5. Mean Use of Simple Syntax

Variable	n	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Tangibility						
Intangible	129	.4868	.27	4.04	617	< .01
Tangible	490	.5969	.28			
Brand Affinity						
Loved Brand	68	.4374	.23	-2.29	617	< .05
Other Than Loved Brand	551	.5187	.28			
Sexual Imagery Usage						
Sexual Imagery Used	72	.4395	.27	-2.29	617	< .05
No Sexual Imagery Used	547	.5190	.28			
Fatty/Sweet Food Imagery Usage						
Fatty/Sweet Food Imagery Used	79	.5166	.22	.23	617	> .05
No Fatty/Sweet Food Imagery Used	540	.5088	.28			

BP3: Use concrete words in advertising copy.

Ads varied widely in the amount of words —and concrete words —incorporated in the messages. In terms of total words, ads ranged from 3 to 396. On average, ads featured 59 words, as shown in Table 4-6. Almost half of the ads (45.7%) used 20 to 59 words. Few television ads (7.9%) used more that 100 words. The distribution of concrete words in the ads ranged from 0 to 33, and the median was 4, as shown in Table 4-7. The majority (64.9%) of commercials used 0 to 4 concrete words. There were no concrete words in 11.9 percent of the ads.

Table 4-6. Number of Total Words in Ads

N = 619; Median = 51

Total Words	Frequency	Cumulative Percent
3 – 19	60	9.7
20 – 39	139	22.4
40 – 59	144	23.3
60 – 79	118	19.1
80 – 99	108	17.4
100 – 119	21	3.4
120 – 139	3	.6
140 – 159	5	.8
160 – 179	6	1.2
180 – 199	5	.8
200 – 219	3	.5
317	1	.2
374	1	.2
396	1	.2

Table 4-7. Number of Concrete Words in Ads

N = 619; Median = 3

Concrete Words	Frequency	Percent
0	71	11.5
1	92	14.9
2	81	13.1
3	83	13.4
4	74	12.0
5	58	9.4
6	38	6.1
7	24	3.9
8	29	4.7
9	25	4.0
10	11	1.8
11	9	1.5
12	8	1.3
13	6	1.0
14	3	.5
15	1	.2
17	2	.3
25	1	.2
27	1	.2
33	2	.3

In order to account for differences in the number of words used in ads, the proportion of concrete words to total product-related words within ads was calculated. The proportion of concrete words ranged from 0 to 100%. For purposes of convenience, Table 4-8 presents the range of proportions in 10 percent increments. The median was .0650.

As demonstrated in Tables 3-7 and 3-8, 88.5 percent of all ads used at least one product-related noun. For the majority of ads (57.3%), no more than 1 noun in 10 words was a product-related noun. Two ads had a 100 percent ratio of concrete words to total product-related words. However, each of these ads contained only one concrete word which was also the only product-related word. Though the number of concrete words in ads was low, this finding may be consistent with the best practice recommendations because intelligible sentences require a variety of words. The low finding of concrete words may have been an artifact of the way the variable was measured.

Table 4-8. Percentage of Concrete Words to Total Product-Related Words

N = 619; Median = .0650

Percentage	Frequency	Cumulative Percent
0	71	11.5
1 – 9.9%	425	57.3
10 – 19.9%	174	28.1
20 – 29.9%	12	1.9
30 – 39.9%	3	.5
40 – 49.9%	1	.2
50 – 59.9%	2	.3
100%	2	.3

In order to investigate how concrete words were used across different PCT conditions, chi-square tests were applied to concrete word usage and the PCT condition. The concrete word to total product-related words median (.0650) was used to split concrete word usage into high and low use categories. Based on the median, ads with concrete word usage scores falling below .0651 were coded as low use of concrete words. Ads with concrete word usage scores equal to or above .0651 were coded as high use of concrete words.

As shown in Table 4-9, a significant relationship emerged between concrete word usage and tangibility ($\chi^2(1) = 7.54$, $p < .01$), where 50 percent of the ads for tangible products/services had high concrete word usage and 36.4 percent of the ads for intangible products/services had high concrete word usage. This finding is consistent with the best practice recommendation. There was a significant effect for concrete word usage and ads with fatty/sweet food imagery ($\chi^2(1) = 10.98$, $p < .01$), where 64.6 percent of the ads with fatty/sweet food imagery had high concrete word usage and 44.6 percent of the ads without fatty/sweet food imagery had high concrete word usage. This finding is inconsistent with the best practice recommendation. The relationships between concrete word usage and brand affinity ($\chi^2(1) = .00$, $p > .05$), as well as between concrete word usage and sexual imagery usage ($\chi^2(1) = .55$, $p > .05$) were not significant.

Table 4-9. Product and Content Type by Use of Concrete Words

N = 619; Median = .0650	Low Product-related Nouns			High Product-related Nouns			Total
	n	Total%	PCT%	n	Total%	PCT%	PCT
Tangibility[a]							
Intangible	100	16.2	77.5	29	4.7	22.5	129
Tangible	209	33.7	42.7	281	45.4	57.3	490
Brand Affinity[b]							
Loved Brand	24	3.9	35.3	44	7.1	64.7	68
Other Than Loved Brand	285	46.0	51.7	266	43.0	48.3	551
Sexual Imagery Usage[c]							
Sexual Imagery Used	34	5.5	47.2	38	6.1	52.8	72
NO Sexual Imagery	275	44.4	50.3	272	44.0	49.7	547
Fatty/Sweet Food Imagery Usage[d]							
Fatty/Sweet Food Imagery Used	12	1.9	15.2	67	10.8	84.8	79
NO Fatty/Sweet Food Imagery	297	48.0	55.0	243	39.3	45.0	540

[a] $\chi^2(1) = 49.66$, $p < .01$
[b] $\chi^2(1) = 6.54$, $p < .05$
[c] $\chi^2(1) = .24$, $p > .05$
[d] $\chi^2(1) = 43.69$, $p < .01$

One-tailed independent samples *t*-tests were used to compare the proportion of concrete words (ratio of concrete words to total *product-related* words in the ad) in each of the four PCT conditions. There was a significant effect of tangibility ($t(617) = -4.91$, $p < .01$), where ads for tangible products/services had a higher proportion of concrete words (M = .0893, SD = .09) than ads for intangible products/services (M=.0505, SD = .05), as shown in Table 4-10. The relationship was not consistent with the best practice recommendation. There was a significant effect of fatty/sweet food imagery usage ($t(617) = 6.30$, $p < .01$), where ads with fatty/sweet food imagery usage had a higher proportion of concrete words (M = .1335, SD = .09) than ads without fatty/sweet food imagery usage (M=.0736, SD = .08), as shown in Table 4-10. This finding was consistent with the best practice recommendation. There was no significant effect for brand affinity ($t(617) = .38$, $p > .05$) or for sexual imagery usage ($t(617) = -.3$, $p > .05$).

Table 4-10. Mean Use of Concrete Words (Product-Related Word) by PCT Condition

PCT	n	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Tangibility						
Intangible	129	.0505	.05	-4.91	617	< .01
Tangible	490	.0893	.09			
Brand Affinity						
Loved Brand	68	.0849	.06	.38	617	> .05
Other Than Loved Brand	551	.0808	.08			
Sexual Imagery Usage						
Sexual Imagery Used	72	.0785	.08	-.30	617	> .05
No Sexual Imagery Used	547	.0816	.08			
Fatty/Sweet Food Imagery Usage						
Fatty/Sweet Food Imagery Used	79	.1335	.09	6.30	617	< .01
No Fatty/Sweet Food Imagery Used	540	.0736	.08			

Another set of *t*-tests was applied to compare the proportion of concrete words to *total* words in each of the four PCT conditions. The same pattern emerged. Ads for tangible products/services and ads with fatty/sweet food imagery had a significantly higher proportion of concrete word usage than their counterparts, as summarized in Table 4-11.

Table 4-11. Mean Use of Concrete Words (Total Words) by PCT Condition

Variable	n	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Tangibility						
Intangible	129	.0422	.04	-7.26	617	< .01
Tangible	490	.0779	.08			
Brand Affinity						
Loved Brand	68	.0706	.05	.01	617	> .05
Other Than Loved Brand	551	.0704	.05			
Sexual Imagery Usage						
Sexual Imagery Used	72	.0724	.05	.34	617	> .05
No Sexual Imagery Used	547	.0702	.05			
Fatty/Sweet Food Imagery Usage						
Fatty/Sweet Food Imagery Used	79	.1100	.06	7.58	617	< .01
No Fatty/Sweet Food Imagery Used	540	.0647	.04			

BP4: Use images of the product or service in ads.

Almost every ad (98.5%) in this study used an image of the product or service, as shown in Table 4-12. This finding is consistent with the best practice recommendation. As this best practice was almost universally followed, there were no analyses based on PCT condition.

Table 4-12. Best Practice 4: Product/Service Image Usage

n = 619	Frequency	Percent
Product/Service Image Yes	610	98.5
Product/Service Image No	9	1.5

BP5: Ads should match audio and visual information.

The number of matched audio and visual scenes ranged from 0 to 31, and the median was 6, as shown in Table 4-13. All but three ads (99.5%) had at least one matched audio and visual scene.

Table 4-13. Number of Matched Audio and Visual Scenes in Ads

N = 619; Median = 6

Matched Scenes	Frequency	Percent
0	3	.5
1	41	6.6
2	50	8.1
3	70	11.3
4	62	10.0
5	71	11.5
6	55	8.9
7	79	12.8
8	54	8.7
9	32	5.2
10	21	3.4
11	29	4.7
12	11	1.8
13	12	1.9
14	5	.8
15	6	1.0
16	6	1.0
17	4	.6
18	1	.2
21	1	.2
22	1	.2
23	1	.2
24	1	.2
25	1	.2
31	1	.2

In order to account for differences in the number of scenes across ads, the proportion of matched audio and visual scenes to total scenes within ads was calculated. The proportion of matched audio and visual scenes ranged from 0 to 100. The median proportion was 60 percent, as shown in Table 4-14. Well over half (63.8%) of the ads had matching audio and visual scenes at least 50 percent of the time, and 17.9 percent of the ads had 100 percent matching audio and visual scenes.

Table 4-14. Percentage of Matched Audio and Visual Scenes to Total Scenes

N = 619; Median = 60 percent

Percentage	Frequency	Cumulative Percent
0	3	.5
1 – 9%	23	3.7
10 – 19%	34	5.5
20 – 29%	58	9.4
30 – 39%	64	10.3
40 – 49%	42	6.8
50 – 59%	79	12.8
60 – 69%	87	14.1
70 – 79%	55	8.9
80 – 89%	47	7.6
90 – 99%	16	2.5
100%	111	17.9

One-tailed independent samples *t*-tests were used to compare the proportion of matched audio/visual information in each of the four PCT conditions. There was a significant effect of tangibility ($t(617) = 4.77$, $p < .01$), where ads for intangible products/services had a higher proportion of matched audio/visual information (M = .6970, SD = .27) than ads for tangible products/services (M =.5624, SD = .29), as shown in Table 4-15. This finding is consistent with the best practice recommendation. There was a significant effect of brand affinity ($t(617) = -4.21$, $p < .01$), where ads for other than loved brands had a higher proportion of matched audio/visual information (M = .6075, SD = .29) than ads loved brands (M=.4524, SD = .28). This finding is not consistent with the best practice recommendation. There was no significant effect for sexual imagery usage ($t(617) = -.65$, $p > .05$) or fatty/sweet food imagery usage ($t(617) = -1.46$, $p > .05$).

Table 4-15. Mean Use of Matched Audio/Visual Information

Variable	n	Mean	*t*-test (1-tailed) *t*	*df*	*p*-value
Tangibility					
Intangible	129	.6970	4.77	617	< .01
Tangible	490	.5624			
Brand Affinity					
Loved Brand	68	.4524	-4.21	617	< .01
Other Than Loved Brand	551	.6075			
Sexual Imagery Usage					
Sexual Imagery Used	72	.5693	-.65	617	> .05
No Sexual Imagery Used	547	.5932			
Fatty/Sweet Food Imagery Usage					
Fatty/Sweet Food Imagery Used	79	.5458	-1.46	617	> .05
No Fatty/Sweet Food Imagery Used	540	.5970			

BP6: Ads with high information density per structural feature should use fewer orienting eliciting structural features than ads with low information density per structural feature.

Information density per structural feature ranged from 0.00 to 5.25, and the median was 1.8165, as shown in Table 4-16.

Table 4-16. Information Introduced (I-squared) Per Second in Ads

N = 619; Median = 1.82

I-squared score	Frequency	Cumulative Percent
0.00	4	.6
0.01 – 0.09	0	0.0
0.10 – 0.19	2	0.3
0.20 – 0.29	0	0.0
0.30 – 0.39	0	0.0
0.40 – 0.49	2	0.3
0.50 – 0.59	1	0.2
0.60 – 0.69	4	0.7
0.70 – 0.79	3	0.5
0.80 – 0.89	4	0.7
0.90 – 0.99	3	0.5
1.00 – 1.09	17	2.9
1.10 – 1.19	11	2.1
1.20 – 1.29	26	4.2
1.30 – 1.39	32	5.2
1.40 – 1.49	33	5.3
1.50 – 1.59	51	8,2
1.60 – 1.69	57	9.2
1.70 – 1.79	46	7.4
1.80 – 1.89	71	11.5
1.90 – 1.99	35	5.7
2.00 – 2.09	63	10.2
2.10 – 2.19	24	3.9
2.20 – 2.29	38	6.1
2.30 – 2.39	25	4.0
2.40 – 2.49	17	2.7
2.50 – 2.59	15	2.4
2.60 – 2.69	12	1.9
2.70 – 2.79	5	0.8
2.80 – 2.89	7	1.1
2.90 – 2.99	1	0.2
3.00 – 3.09	1	0.2
3.10 – 3.19	2	0.3
3.20 – 3.29	1	0.2
3.30 – 3.39	2	0.3
4.30 – 4.39	1	0.2
5.00 – 5.09	2	0.3
5.25	1	0.2

OESFs/sec ranged from 0.00 to 2.50, and the median was .56, as shown in Table 4-17. One in six (16.3%) OESFs/sec scores was less than .31. Over half (52.5%) of the ads had OESFs/sec scores of at least .56. One in fourteen (7.3%) ads had OESFs ranging from 1.00 to 2.50 per second. That range is noteworthy because previous research has described ads with high structural complexity as containing .56 OESFs/sec (Potter et al., 2006). Recalling that OESFs are established by either a camera change or a sound change, in order to achieve an OESF/sec score of 1.00 or greater, scenes and/or sound must have changed quite rapidly, placing a higher demand on cognitive processing resources—resulting in very rapid resource allocation to encoding.

A large majority (85.8%) of *audio* OESFs/sec scores were below .31 OESFs/sec. Very few (1.3%) audio complexity scores were greater than .56 OESFs/sec, and even less (1.0%) were greater than .59 OESFs/sec.

Over one third (32%) of the *visual* OESFs/sec scores were .31 or less. Nearly one third (28.6%) of visual OESFs/sec scores were at least .56.

Table 4-17. OESFs Per Second Scores in Ads

N = 619; Median = 56 percent

OESF/sec Score	Frequency	Cumulative Percent
0.00	3	.5
0.03 – 0.09	9	1.4
0.10 – 0.19	31	5.1
0.20 – 0.29	53	8.6
0.30 – 0.39	74	12.0
0.40 – 0.49	78	12.6
0.50 – 0.59	92	14.9
0.60 – 0.69	78	12.6
0.70 – 0.79	69	11.1
0.80 – 0.89	45	7.3
0.90 – 0.99	39	6.3
1.00 – 1.09	23	3.3
1.10 – 1.19	12	1.9
1.20 – 1.29	6	1.0
1.30 – 1.39	3	.5
1.40 – 1.49	1	.2
2.20 – 2.29	1	.2
2.50	1	.2

Two 30-second ad scripts illustrate ads that contained OESFs (camera and/or sound changes) greater than 1.00 per second.

Example 1: A 30 second ad for Lexus employed 30 camera changes and 4 sound changes in order to symbolize the automobile's horsepower.

VIDEO	AUDIO
Open on fuel tank pouring fuel on a tarmac.	Anncr 1 Voice Onset (VO): Fast, aggressive, relentless; fire has no equal …
Camera change (CC) to a different view of the fuel tank with fuel pouring out.	
CC to a warning sign with "FLAMMABEL LIQUID" written on it.	
CC to a close up (CU) of a lighted torch. A car can be seen in the background.	
CC to the interior of the car. A hand is on the ignition.	
CC to a full view of the front of the car. Four crew members are in the shot. One crew member has the torch in his hand and is lighting the fuel.	SFX: Engine revving Anncr 1: …Or does it? (voice continued within 2 seconds)
CC to a shot of the fire igniting and taking off down the tarmac.	MO: SFX: Engine sounds continue throughout the race. (Continued rumbling from initial revving.)
CC to a shot of the car taking off.	
CC to the speedometer.	
CC to a long shot of the car racing the fire.	
CC to a CU of the fire.	
CC to a CU of the car.	
CC to a medium shot of the car and the fire.	
CC to a CU of the car and fire.	
CC to a shot of the fire, and the car comes racing through the scene.	
CC to another CU of the car and a little of the fire in the frame.	
CC to the speedometer.	
CC to a CU of a tire.	
CC to the driver handling the steering wheel.	
CC to a medium shot of the car and fire.	
CC to a scene of the car and the fire. The car is racing straight toward the camera.	
CC to a CU of a tire.	
CC to the car flashing by.	
CC to the rear of the car.	
CC to a long shot of the car overtaking the fire.	
CC to a foot applying the break.	
CC to a CU of the car pulling off the road, just ahead of the fire.	
CC to an extreme CU of the side of the car.	
CC to the car following through with the stop.	
CC to the car completing the stop.	Anncr 1 VO. The 300 horsepower Lexus GS.
CC to sales information graphic.	Anncr 2 Voice Change (VC). See your Atlanta area Lexus dealer.

Example 2: A 30 second ad for Little Debbie made use of 20 camera changes and 18 sound changes.

VIDEO	AUDIO (all are singing)
Open on a man in a convenience.	VO: I've got sunshine
CC to another man in the same convenience store.	VC: On a cloudy day.
CC to another man dancing in the convenience store.	VC: On a cloudy day.
CC to a man previously seen in the store.	VC: When it's cold
CC to yet another man in the store.	VC: Outside
CC to another man in the store.	VC: I've got
CC to a woman in the store.	VC: The month of May.
CC to man singing into a pack of donuts.	VC: Well,
CC to a previously seen man spinning.	VC: I guess
CC to CU of the same man spinning.	
CC to a man previously seen. He is dancing.	VC: You say, what can
CC to a CU of the same man dancing.	
CC to a man previously seen. Dancing.	VC: Make me feel – what can make me
CC to previously seen woman. Dancing.	VC: Feel this way?
CC to previously seen man selecting a snack cake. Little Snack display is seen in the background.	VC: My girl.
CC to CU of a previously seen man passionately singing.	VC: My girl.
CC to CU of Little Debbie display. Man in the background who was previously seen.	VC: My girl.
CC to another man singing.	VC: Talkin' about my girl.
CC to two store clerks viewing a store monitor. They are watching the customers act silly in the store.	VC: That's alright dawg. (normal talking)
CC to store clerks (now three clerks are visible). They are commenting on the customers' performance.	VC: He made the song his own.
CC to CU of Little Debbie display.	Anncr 1 VC: Little Debbie: Unwrap a smile.

The Pearson correlation between ad average information density per structural feature scores and OESFs/sec scores was -.26 (*p* =.01), showing a negative, statistically significant relationship between average information density per structural feature and OESFs/sec. The negative correlation was consistent with the best practice recommendation.

The relationship between these two variables also was examined using chi-square tests. Here, the average complexity per OESF and OESF/sec variables were first dichotomized based on their medians (1.8165 for average complexity per OESF and .56 for OESFs). Ads with average complexity per OESF scores equal to or below 1.8165 were coded as low average complexity per OESF. Ads with average complexity per OESF scores above 1.8165 were coded as high I-squared. Ads with OESFs/sec scores equal to or below .56 were coded as low OESFs/sec. Ads with OESFs/sec scores above .56 were coded as high OESFs/sec. As shown in Table 4-18, a significant relationship emerged between I-squared/sec and OESFs/sec ($\chi^2(1) = 2.52$, $p < .01$). This finding was consistent with the best practice recommendation.

Table 4-18. OESFs/sec by Information Density Per Structural Feature Using Median Splits

N = 619; Median = 1.8165	Low OESFs/sec (≤ .56)			High OESFs/sec (≥ .59)			Total
Content Type	n	Total%	PCT%	n	Total%	PCT%	PCT
Median Information Density Per OESF[a]							
Low Density (≤ 1.8165)	122	3.4	11.8	188	25.4	88.2	310
High Density (1.8180)	193	1.3	11.8	116	9.7	88.2	309

[a] $\chi^2(1) = 33.05$, $p < .01$

The OESFs/sec variable also was dichotomized based on scores found to impact cognitive processing. Consistent with measurements used by Potter et al. (2006) ads with OESFs/sec scores falling below .32 were coded as low OESFs/sec and ads with OESFs/sec scores falling above .55 were coded as high OESFs/sec. Table 4-19 shows that a statistically significant relationship existed between I-squared/sec and OESFs/sec, and the relationship was consistent with the best practice recommendation.

Table 4-19. OESFs/sec by Information Density per Structural Feature Using Cognitive Processing Tipping Points

n = 242	Low OESFs/sec (≤ .31)			High OESFs/sec (≥ .56)			Total
Content Type	n	Total%	PCT%	n	Total%	PCT%	PCT
Average Information Density Per OESF [a]							
Low Density (1.8165)	41	2.7	24.3	197	8.6	75.7	238
High Density (1.8180)	60	1.5	12.0	128	10.7	80.0	188

[a] $\chi^2(1) = 12.53$, $p < .01$

BP7: Ads for intangible items/services should use fewer orienting eliciting structural features than ads for tangible items/services.

A one-tailed independent samples *t*-test was used to determine if OESFs/sec differed on the basis of product tangibility. Ads for intangible products/services had higher OESF/sec (M = .6167, SD = .30) than ads for tangible products/services (M=.4929, SD = .28), as shown in Table 4-20. This difference was statistically significant ($t(617) = -4.21$, $p < .01$) and was inconsistent with the best practice recommendation.

Table 4-20. Mean Use of OESFs/sec by Tangibility

Product Type	n	%	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Intangible/OESFs per second	129	21%	.6167	.30	-4.21	617	< .01
Tangible/OESFs per second	490	79%	.4929	.28			

BP8: Ads for loved brands should use fewer orienting eliciting structural features than ads for other than loved brands.

A one-tailed independent samples *t*-test was used to see if OESFs/sec differed on the basis of brand affinity. Ads for loved brands had higher OESFs/sec (M = .7004, SD = .24) than ads for other than loved brands (M =.5774, SD = .30), as shown in Table 4-21. Here, too, this difference was statistically significant ($t(617) = 3.20$, $p < .01$)—and, again, not consistent with the best practice recommendation.

Table 4-21. Mean Use of OESFs/sec by Brand Affinity

Content Type	n	%	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Loved Brand/OESFs per second	68	11%	.7004	.24	3.20	617	< .01
Other Than Loved Brand/OESFs per second	551	89%	.5774	.30			

BP9: Ads that use sexual imagery should use fewer orienting eliciting structural features than ads that do not use sexual imagery.

Using a one-tailed independent samples *t*-test, it was determined that ads with sexual imagery usage had a higher proportion of OESFs/sec (M = .6619, SD = .41) than ads without sexual imagery usage (M=.5816, SD = .28), as shown in Table 4-22. The difference here was statistically significant ($t(617) = 2.13$, $p < .02$), and not consistent with the best practice recommendation.

Table 4-22. Mean Use of OESFs/sec by Sexual Imagery Usage

Content Type	n	%	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Sexual Imagery Used/OESFs per second	72	11.6%	.6619	.41	2.13	617	< .02
No Sexual Imagery Used/OESFs per second	547	88.4%	.5816	.28			

BP10: Ads that use fatty or sweet food imagery should use fewer orienting eliciting structural features than ads that do not use fatty or sweet food imagery.

The mean OESF/sec score for ads that used fatty/sweet food imagery was .6209. The comparable mean for ads that did not use fatty/sweet food imagery was .5865. Using a one-tailed independent samples *t*-test, it was determined that these means were not significantly different ($t(617) = .948$, $p > .05$), as shown in Table 4-23.

Table 4-23. Mean Use of OESFs/sec by Fatty or Sweet Food Imagery Usage

Content Type	n	%	Mean	SD	*t*-test (1-tailed) *t*	*df*	*p*-value
Fatty/Sweet Food Imagery Used/OESFs per second	79	13%	.6209	.26	.948	617	> .05
No Fatty/Sweet Food Imagery Used/OESFs per second	540	87%	.5865	.31			

Most Cognitively Taxing Condition

Based on LC4MP, the more taxing the ad message, the fewer the number of OESFs that should be used in the message. For example, an ad for a loved brand that did not use chronological order or simple syntax would be more taxing than one that was not for a loved brand and used chronological order and simple syntax. Although there was no best practice to account for this additive effect, the interplay between taxation and complexity levels was examined. Taxing elements in each ad were summed. Taxing elements included *not* using chronological order, simple syntax, concrete words, or product/service images, audio/visual dissonance, ads for intangible products/services, loved brands, ads that used sexual imagery, and ads that used fatty/sweet food imagery. Taxing elements ranged from 0 to 6 and had a mean of 2, as shown in Table 4-24. Based on correlation results, there was not a significant relationship between these sums and OESFs/sec, nor between these sums and average complexity per OESF. Taxation level was not significantly related to OESFs/sec ($r = .020$, $p > .05$) or average complexity per OESF ($r = -.076$, $p > .05$

Table 4-24. Sum of Cognitively Taxing Ad Condition

N = 619; Mean = 2.0; SD = 1		
Number of BPs Not Followed	Frequency	%
0	85	13.7
1	160	25.8
2	149	24.1
3	142	22.9
4	54	8.7
5	22	3.6
6	7	1.1

Summary of Best Practice Results

This study recommended using Best Practices 1, 2, 3, 4, and 5 regardless of PCT condition. The number of these best practices that each ad followed was tallied, as shown in Table 4-25. An overwhelming majority of ads (85%) complied with BP1. Almost three in four (71.2%) followed BP2[1]. BP3 was followed by about half of the ads (47.2%) in the study. Almost all ads (98.5%) complied with BP4. BP5 was followed by slightly over half of the ads (52.0%) in this study. As shown in Table 4-26, 25.7 percent of the ads followed all five of these best practices. An additional 30.0 percent followed four of these recommended best practices. Two ads (.3%) did not follow any of these best practices.

Table 4-25. Individual Best Practices Followed – 1, 2, 3, 4, and 5

N= 619 Best Practice	Frequency	%
BP1: Chronological Order Usage	526	85.0
BP2: Simple Syntax Usage	441	71.2
BP3: Concrete Word Usage	292	47.2
BP4: Product/Service Image Usage	610	98.5
BP5: Matched Audio/Video Usage	322	52.0

Table 4-26. Compliance with Best Practices 1, 2, 3, 4, and 5

N = 619; Mean = 4.0; SD = 1.2 Number of BPs Followed	Frequency	%
0	2	.3
1	33	5.3
2	98	15.8
3	141	22.8
4	186	30.0
5	159	25.7

[1] To examine compliance with BPs 2, 3, and 5, the variables were dichotomized when the data were not nominal. The median value was used to differentiate compliance in simple syntax usage, concrete word usage, and matched audio/video usage in ad copy.

To examine compliance with BPs 6 through 10, variables were dichotomize when the data were not nominal. The median value was also used to differentiate ads using high structural complexity and those using low structural complexity.

With information density per structural feature, tangibility, loved brands, sexual imagery, and fatty/sweet food imagery, there were two ways that a best practice could be properly followed and two ways that a best practice could be improperly followed. For example, to properly follow a best practice: (1) an ad using fatty/sweet food imagery would need to contain less than the OESF/sec median or (2) an ad not using fatty/sweet food would need to contain more than the OESF/sec median. To not follow a best practice: (1) an ad using fatty/sweet food imagery had to contain more than the OESF/sec median or (2) an ad not using fatty/sweet food imagery had to contain less than the OESF/sec median. Nearly one in five (18.1%) ads followed BP 6. Slightly over half of the ads complied with BP7, 8, and 9—57.7% for BP7, 58.5% for BP8, and 57.0% for BP9, respectively, as summarized in Table 4-27. BP10 was followed by nearly half of the ads (46.7%) in this study.

Table 4-27. Individual Best Practices Followed – 7, 8, 9, and 10

N= 619 Best Practice	Frequency	%
BP7: Tangibility	357	57.7
BP8: Loved Brands	362	58.5
BP9: Sexual Imagery	353	57.0
BP10: Fatty/Sweet Food Imagery	289	46.7

A sum of all 10 best practices was computed to determine overall compliance with the theoretically-based best practices suggested by LC4MP. The mean number of best practices followed was 6.0 (SD = 1.7). A majority of ads (62.7%) followed five to seven best practices. As shown in Table 4-28, only a handful of ads (.5%) followed all 10 best practices. On the other hand, very few (1.6%) of the ads followed no more than two of the best practices.

Table 4-28. Overall Number of Best Practices Followed

N = 619; Mean = 6.0; SD = 1.7

Number of BPs Followed	Frequency	%
2	10	1.6
3	52	8.4
4	55	8.9
5	126	20.4
6	142	22.9
7	120	19.4
8	83	13.4
9	28	4.5
10	3	.5

Chapter 5

Discussion

The overall goal of this dissertation was to add to the communication and cognitive science literatures by examining the design structure of television ads and evaluating the extent to which television ad structure is consistent with the theoretical understanding of how humans process information.

A primary tenet of LC4MP is that humans are limited capacity processors and mediated message processing is dynamic and interactive, impacting how cognitive resources are divided. Ad structure and content lead to different patterns of motivational and cognitive responses in viewers and influence how ads are attended, encoded, and stored (A. Lang, 2006).

This study explored 10 best practice recommendations derived from LC4MP that apply to television ads. The chapter begins by summarizing and interpreting the findings that emerged with those best practice recommendations in light of the relevant literature. Next, the overall conclusions of the study derived from these findings are presented. From this synthesis of the findings, a number of issues regarding the limited capacity model emerge that clearly have implications for television ad production. These implications for television ad production are integrated with the summary and conclusions. This chapter ends with discussion of study limitations, as well as suggestions for future research.

BP1: Construct ad copy in chronological order.

Whether it was strategic planning or happenstance, a majority (85%) of the ads used chronological order for ad copy. Empirical evidence exists regarding the importance of using narrative structure with television news reports, and it could be that those who create television ads understand the value of using narrative sequencing in ads (Findahl & Hoijer, 1981; A. Lang, 1989; Wise et al., 2008). This finding is consistent with the best practice recommendation, as ads written in chronological order should be processed more efficiently and lead to increased recognition memory.

When chronological order usage was compared to PCT conditions, only brand affinity had a significant difference in the proportion of concrete words used in ads. Less than 70 percent of the ads for loved brands used chronological order. This is the first of several examples of loved brands breaking from the best practice recommendation, as seen in the results chapter. As this is not the only instance that loved brand ads have broken the rules, potential explanations for breaking the rules will be discussed here. One possibility is that ad producers chose to use a creative design that did not take theory into account and ads were designed poorly in regard to the best practice recommendations. Loved brands, as determined by Businessweek (2005a), are not new to the market. It is possible that when those brands were established, ads employed the best practice recommendations. Later, as those brands gained popularity, creative elements may have been added that departed from the best practice recommendations, resulting in ads that do not comply with LC4MP. Another explanation for loved brand ads breaking from best practice recommendations is that the ads for loved brands had goals other than attention and recognition. Best practices to increase brand affect, for example, are not always consistent with those designed to maximize recognition memory. For example, more favorable evaluations of messages are achieved in messages with features that overload the cognitive processing system (Reeves & Nass, 2002).

BP2: Use simple syntax in advertising copy.

Ads using simple syntax in at least 51 percent of advertising copy were considered to have high simple syntax usage. Just over half (51.2%) of the ads in this study met this threshold. The method for measuring simple syntax usage may have restricted the number of sentences that were counted as using simple syntax. For example, consider the sentence “Call this number now.” While it distinctly expresses the intended meaning, this was not counted as simple syntax because there was no subject in the sentence. Marschark and Paivio (1977) posited that the context of a message along with an integrated image enhance recognition memory, suggesting that in the absence of a subject-verb-object format, an ad can still convey easily interpretable information. Considering that sentences with an implied subject were presented in the context of an ad with a specific message, the likelihood is that the viewer was able to process the information without impeding other cognitive suprocesssing. This study defined simple syntax sentences as those that use subject-verb-object ordering, and all three elements had to be present. A post-hoc analysis revealed that had sentences with an *implied subject* been included in the sample, the median use of simple syntax would have been increased to 67 percent, as shown in Table 4-1. That being said, with over half of the ads using a high percentage of simple syntax, this study provides a benchmark from which to compare and base future research findings.

Table 4-1. Differences in Simple Syntax Measurement

N = 619 Percentage of Simple Syntax Sentences Used in Ad Copy	Initial Count (Median = .50)	Cumulative %	New Count (Median = .67)	Cumulative %
0	65	10.5	31	5.0
10 – 19%	17	2.7	2	0.4
20 – 29%	53	8.5	19	3.1
30 – 39%	60	9.6	40	6.5
40 – 49%	50	8.0	36	5.8
50 – 59%	121	19.5	93	15.0
60 – 69%	90	14.5	109	17.6
70 – 79%	57	9.2	86	13.9
80 – 89%	60	9.6	88	14.2
90 – 99%	5	0.1	8	1.3
100%	41	6.6	107	17.3

Although using simple syntax was recommended for all ads, the proportion of simple syntax usage was measured across PCT conditions. A significant difference emerged between simple syntax usage and tangibility, brand affinity, and sexual imagery usage. The recommendation was that simple syntax should be more often used for the more cognitively taxing condition of the PCT. For tangibility, the recommended relationship was found. Ads for intangible products/services had 56.6 percent simple syntax usage and ads for tangible products/services had 29.0 percent usage. The opposite was found for brand affinity and sexual imagery usage. Ads for loved brands and ads using sexual imagery had less simple syntax usage than their counterparts, which is inconsistent with the recommendation. Although there was not a significant finding for simple syntax usage across fatty/sweet food imagery usage, results show that ads using fatty/sweet food imagery had slightly less simple syntax usage than their counterparts, which also ran counter to the recommendation.

Ads for loved brands, ads that use sexual imagery, and ads that use fatty/sweet food imagery were predicted to increase arousal. If television ad producers using these features want the message to be remembered, they should include simple syntax to help ease the cognitive load. Because messages vary in terms of structural complexity, some ads benefit from automatic calls to attention while others suffer at higher calls to attention. Perhaps ads found inconsistent with this recommendation contained other compensating elements that facilitate cognitive processing. It could be, for example, that ads failing to use simple syntax may have been consistent with the best practice recommendations for chronological order, product-related noun, product/service image, and matched audio/video usage. Though there is no empirical evidence to support the additive effects of using Best Practices 1 through 5, it may be possible that combining best practices could help ease the viewer's cognitive load. In cases such as these where cognitive processing might not be optimized, cognitive processing is still sufficient for processing ad information.

BP3: Use concrete words in advertising copy.

Words activate verbal and imaginal interconnection representations, and concrete words help strengthen and increase the number of activations (Paivio, 1994). Using concrete words has an additive effect on memory performance by creating meaningfulness and facilitating encoding for ad information (Paivio, 1994). There was no prior literature referencing concrete word usage in television ads. Without a benchmark for suitable concrete word usage in ad copy, on the surface, concrete word usage appears to be low, with the majority of commercials (64.9%) using zero to four concrete words. The median number of concrete words in television ads was four, and the median proportion of concrete words to all product-related words in ad copy was 8 percent. Considering that sentences are comprised of many types of words—verbs, adjectives, adverbs, articles—it makes sense that ads had a low concrete word to total product-related words ratio (Begg, 1972). It would be inappropriate to suggest that ads should contain a high number of concrete words because in order to construct an intelligible sentence, the sentence must contain many other words than concrete words.

When compared across PCT conditions, concrete word usage was significantly related to tangibility as well as fatty/sweet food imagery usage. Ads for intangible products/services used a lower proportion of concrete words than ads for tangible products/services. The direction of this relationship was counter to the prediction. Based on LC4MP, concrete words should be more prevalent in ads for intangible products/services in order to ease the cognitive load and to preserve processing resources that are consumed in an abstract condition. By using a limited number of concrete words, even more processing resources were potentially required which would result in poorer processing of message information. Conversely, ads with fatty/sweet food imagery usage contained a higher proportion of concrete words than ads without fatty/sweet food imagery usage. This relationship was in the predicted direction as using concrete words for ads with fatty/sweet food imagery helps to reduce the cognitive burden on viewers. Ad producers should take care to incorporate concrete words when preparing ad narrative. Doing so will improve message processing by reducing viewers' cognitive load.

BP4: Use images of the product or service in ads.

Pictures play a leading role in augmenting verbal or textual information; when using an audio/visual medium, verbal information is boring and dull without engaging pictures, and learning is enhanced with visuals and images (David, 1998). Practically every television ad (98.5%) used an image of the product or service. This best practice was included because in the past, there were some television ads that did not use an image of the product (Cartype, 2008). Because television is a visual medium, it seemed surprising that ad producers would not capitalize on this production element. Television ad producers almost invariably used product/service images, clearly demonstrating the industry's recognition of this important element (Blankson, Kalafatis, Cheng, & Hadjicharalambous, 2008).

BP5: Ads should match audio and visual information.

As with ads using product-related concrete words, dual coding can also be affected by using matched audio and visual information. Since television has the ability to present information via two channels (audio and visual), theory suggests that ads should be produced to engage both channels with redundant information (A. Lang, Potter, et al., 1999). In the present study, the measurement for matched audio and visual information suggested that audio/visual redundancy was equally proportioned for each scene. Though the audio and visual match did not have to occur throughout the entire scene, each scene was counted as having redundant information so long as there was a period of matched audio and visual information during the scene. This method did not account for differences in ads that had 100 percent audio/visual matching per scene and ads that had a fraction of audio/visual matching per scene. For example, a scene may have aired for 2 seconds and the matching audio may have played for 2 seconds rendering a perfect match. On the other hand, a scene may have aired for 2 seconds and during that 2-second period, matching audio may have played for 1 second. Even though only one of these examples had 100 percent matching audio/visual time within the scene, both scenes were coded as using matched audio visual. While there were differences in the proportion of audio/visual redundancy among scenes, the differences were not accounted for. Also, other studies have described talking heads in two ways—audio/visual redundancy and audio/video dissonance (Berry & Brosius, 1991; Son, Reese & Davie; 1987). For the present study, talking heads were coded as matched audio and visual information because there was an image of a person talking and the person was talking. For example, audio/visual redundancy included instances when the scene showed an actor speaking about an object (e.g., furniture, real estate, or insurance). This decision is likely to have produced a liberal count of audio/visual redundancy. Based on the method employed in this study, 63 percent of the ads had at least 50 percent matched audio and visual scenes to total scenes among. Over one-sixth (17.9%) of the ads had 100 percent matched audio and visual scenes to total scenes. The results indicate that even though the exact time/length of audio/visual redundancy was not accounted for, the frequency with which congruent messages were presented is likely to benefit processing ad information.

Matched audio and video information was employed differently across PCT conditions. When compared to the median use of matched audio/visual information across PCT condition, there was a significant effect for tangibility and brand affinity. As recommended, intangible product/service ads used a significantly higher proportion of matched audio/visual information than tangible product/service ads. Loved brand ads, on the other hand, had a lower proportion of matched audio/visual information than other than loved brand ads. This is an opposite relationship than what was recommended. Because ads for intangible product/service and ads for loved brands theoretically increase arousal, and are therefore more cognitively taxing, using matched audio/visual information could improve the viewer's ability to encode the ad message.

BP6: Ads with high information density per structural feature should use fewer orienting eliciting structural features than ads with low information density per structural feature.

One of the main influences on ad information processing is the amount of information presented in the ad. Each scene presents a certain amount of information that demands cognitive processing resources, and, likewise, each scene change demands cognitive processing resources. The information density per structural feature reported the average complexity per OESF, and the analysis, in deed, revealed a significant negative correlation which indicated that ads were consistent with the best practice recommendation. The global complexity of the ads in this study was within the level for optimal cognitive processing capacity, suggesting that if viewers were highly attentive to the ad, they had the capacity to thoroughly process the information that was presented.

Ads that contained multiple taxing features (e.g., an ad for a loved brand that featured sexual imagery, low simple syntax and no product image) had an even greater potential to interfere with message information processing than ads using just one arousing feature. However, ads with multiple taxing features were not sensitive to OESFs. The lack of co-variation between multiple taxing features and OESFs indicates that ad producers are not paying attention to the influence OESFs have on information processing. This represents a missed opportunity for ad producers to use OESFs to engage automatic arousal and, in turn, increase attention and recognition memory.

Television ad elements presented a range of OESFs that limited capacity researchers had not examined before. Compared to the findings of Potter et al. (2006), the

OESFs/sec score for the present study was high. However, in 15 to 30 seconds, television ads need to convey a convincing argument for their product or service. Ad cutpoints used in this study were based on previous research that was not related to television ads. According to LC4MP, ads with high OESFs/sec scores were predicted to overload viewers.

This study combined audio and video OESFs/sec to evaluate each ad's overall structural complexity. Nonetheless, ads differed in the way they employed audio and video structural complexity. In Potter et al. (2006), messages that were low in structural complexity had .31 OESFs/sec; messages with high structural complexity had .56 OESFs/sec. Very few (1.3%) ads contained audio complexity with OESFs/sec scores above .56. Nearly one-third (28.6%) of visual OESFs/sec scores were at least .56. The reverse pattern was noted for low OESFs/sec scores where a large amount (85.8%) of audio OESFs/sec scores were below .31 OESFs/sec. Over one-third (32%) of the visual OESFs/sec scores were .31 or less. The majority of the structural complexity was produced from visual OESFs, underscoring the limited role of audio OESFs to overall structural complexity. The same relationship pattern emerged between audio and visual OESFs when scores were based on the median.

Given the limited contribution of audio OESFs revealed from examining differences in audio and visual OESFs/sec among ads, the effectiveness of employing an audio component to ads was considered. A. Lang, Potter, et al. (1999) suggest that verbal encoding is mainly a controlled process, so when the structural complexity is at or beyond capacity, audio information should be limited. When ads are less complex, there is less interference with audio encoding, so more audio information should be included in the less complex condition (A. Lang et al., 2000). Indeed, ads in this sample with high structural complexity had low audio OESFs/sec, and ads that had low structural complexity had high audio OESFs. Although the method of employing audio and visual structural features was consistent with LC4MP, ad producers should be aware that differences in structural complexity call for differences in audio employment.

BP7: Ads for intangible items/services should use fewer orienting eliciting structural features than ads for tangible items/services.

BP8: Ads for loved brands should use fewer orienting eliciting structural features than ads for mundane brands.

BP9: Ads that use sexual imagery should have fewer orienting eliciting structural features than ads that do not use sexual imagery.

BP10: Ads that use fatty or sweet food imagery should use fewer orienting eliciting structural features than ads that do not use fatty or sweet food imagery.

Best Practices 7, 8, 9, and 10 related to the employment of OESFs. For ads containing arousing or abstract content, the recommendation was to incorporate design elements that would not strain the cognitive processing system. Based on the findings of this study, ads for intangible products/services, ads for loved brands and ads with sexual imagery did not follow this best practice recommendation. For loved brands, using high OESFs/sec may have benefits among viewers not familiar with the brand. If viewers are not familiar with a brand, they are less likely to be aroused at the mere sight of the brand. Therefore, the higher structural complexity may increase viewers' attention to the ad message and it may be better encoded (Bradley et al., 1992; A. Lang et al. 1995; A. Lang et al., 2006).

Ads for intangible products/services and ads with arousing content such as sexual imagery and fatty/sweet food imagery have the potential to stress the cognitive processing system. When the viewer is required to imagine the benefits of the product/service, the viewer's cognitive effort is increased, thereby increasing cognitive resources required to process the ad (Nelson & Schreiber, 1992; Paivio, 1968). A. Lang, Potter et al. (1999) argued that arousing content increases cognitive load in a way that impacts audio and video encoding, so a careful balance must be achieved between abstract/arousing content and audio and visual OESFs (A. Lang, 1995).

Arousal is a necessary element for increasing viewers' attention to an ad and arousal can be either arousing content or structural complexity (O'Guinn, Allen, & Semenik, 2006). Viewers are more attentive when viewing arousing content than when viewing calm content due to the increased demand for resources imposed by the arousing content (Bradley et al., 1992; A. Lang, Dhillon, et al., 1995; A. Lang, Potter, et al., 1999). Structural complexity (many camera changes per second) contributes to arousal, but not likely as much as content. So, there are two reasons why high OESFs/sec would not be a recommended best practice when content arousal is high. First, arousing content results in automatic allocation to encoding and storage. In other words, the strain on resources is already higher than when the content is calm. Then, if high structural complexity is added, such as many camera changes per second, the camera change results in an automatic call for resources to encoding—resources which it must steal from storage. Therefore, recall memory goes down.

Summary of compliance with best practice recommendations

On average, 25.8 percent of ads had two elements in the most cognitively taxing condition. For example, an ad may have had low concrete word use and low audio/visual redundancy, or an ad may have been for a loved brand and used sexual imagery. Ads employing more than one PCT condition (e.g., an ad for a loved brand of chocolate that employed sexual imagery) would demand more processing resources than messages using only one PCT condition. If ads employed complex sentence structure and used more than one PCT condition, it would be even more important to reduce the amount of OESF/sec. However, not many ads within this study contained highly taxing or multiple PCT conditions.

The average number of best practices that individual ads complied with was six. One-quarter (25.7%) of the ads followed Best Practices 1 through 5. Best Practice 6 was followed by 43.5% of the ads. Over 50 percent of the ads were in compliance with Best Practices 7, 8, and 9—57.7%, 58.5%, and 57.0%, respectively. Best Practice 10 was followed by slightly less than 50 percent of the ads (46.7%). Ads following 10 best practices were fully compliant with LC4MP. Almost no ads followed all 10 best practices—(.5%).

Limitations

Four limitations associated with this content analysis merit discussion. The first limitation deals with the sample of ads used in the study and the intended audience for those ads. The second focuses on the advertising goals use to derive the best practices tested in the study. The third addresses the issue of content that produces arousal—and the limited range of content considered for that outcome. The final limitation speaks to the way in which product/service image was operationalized. Each of these will be more fully described in the section that follows.

Sample. The sample selected for this study was limited to a subset of ads used from a previous study and was expected to target a general audience age 18 to 49. The media psychology literature shows that there is a difference in how people younger than 18 and older than 49 process mediated information (Fox et at., 2003; A. Lang, Schwartz, et al., 2004; A. Lang, Schwartz, & Snyder, 1999). If, indeed, there are age differences in mediated message processing between younger and older audiences, it may be possible to create a set of best practices tailored to maximize cognitive processing among these groups. Among the 10 best practice recommendations, Best Practices 1 through 5 would probably remain the same, as these components are predicted to facilitate message processing regardless of age. However, the cutoff points linked with structural complexity may vary based on age differences. A study using participants aged 12 to 17 suggests that younger viewers may require faster levels of pacing to elicit increases in arousal; however, when viewing calm messages, younger audiences are less prone to cognitive overload at fast levels of production pacing (A. Lang et al., 2005).

Based on research findings, arousing images, high levels of OESFs, and high levels of I-squared are not the appropriate combination of ad design features to reach older audience viewers (A. Lang, Schwartz, et al., 2004; A. Lang, Chung, Lee, Schwartz, & Shin, 2005; A. Lang, Schwartz et al., 1999). Physiological reports suggest that younger viewers require more OESFs to keep their attention (Fox et al., 2003; A. Lang, Schwartz, et al., 1999). Older viewers (with the average age of 55) are better at controlled attention than younger viewers (Fox, et al., 2003; A. Lang, Schwartz et al., 2004). Older viewers may be less inclined to pay attention to fast-paced messages, and, if too fast-paced, older viewers make less effort to process the message and therefore allocate fewer controlled processing resources to the task (A. Lang, Schwartz, et al., 1999). With ads that are calm and slower-paced, older viewers may allocate attention through controlled processes and try to comply with the instruction to pay close attention to the message (A. Lang, Schwartz, et al., 1999).

Moreover, it must be considered that older viewers will become overloaded more quickly than younger viewers and, therefore, older viewers will encode less information from the message (Fox et al., 2003; A. Lang, 2000; A. Lang, Schwartz, et al., 1999). As arousing images and structural complexity will place a greater demand on cognitive resources which are limited, messages designed with a high level of structural complexity, high level of I-square, and arousing images can cause cognitive overload, decreasing information processing efficiency (A. Lang, 2000; A. Lang, Schwartz, et al., 1999). For older viewers, fast pacing damages recognition memory so ads will not be effectively processed and details will not be remembered by an older demographic. Conversely, younger viewers may benefit from increased information density per structural feature such as graphics and form changes due to their ability to automatically process fast-paced information. As the proper balance of information density per structural featureand structural complexity may differ for different age groups, future studies should examine television ads that target specific age demographics to provide further understanding of how well ads are produced in accordance with LC4MP.

Ad goals. This study focused on television ad goals of capturing viewer attention and optimizing recognition memory. However, while messages need to gain attention in order to transfer information, not all ad campaigns are aimed at enhancing recognition memory (Heath & Nairn, 2005). For example, the promotion goal for brands that are familiar and well-recognized may be to increase corporate awareness or brand affect (Brown, 1986; Heath & Nairn, 2005).

For producing image affinity, even when consumer involvement is low, increased structural complexity may be preferable, even it if results in some information loss (Chock, Fox, Angelini, Lee, & A. Lang, 2007). Reeves and Nass (2002) examined whether visually dynamic messages created more positive evaluations of the people in them than visually static messages. In that study, people were rated more favorably in messages that used more complexity. These findings suggest that in an overload condition, the viewer's default response is to rate the message as more positive; fast-pacing makes actors in the message seem more credible. Consider Coca-Cola or McDonald's. One can assume that a majority of Americans are very familiar with their products, so increasing the structural complexity will increase the personal affect of the message, even though detail memory may suffer (Chock, Fox et al., 2007). Even at high levels of structural complexity, the mind is constantly constructing interpretations; cognitive capacity is still involved in processing media messages and the exposure affect may influence the viewer in ways that are consistent with ad goals that are different than recognition memory (A. Lang et al. 2007; Staymann & Batra, 1991).

Arousing content. In order to examine differences in content arousal, this study included variables shown to elicit arousal—loved brands, sexual images, and fatty/sweet food images. Understanding the relationship between arousal and memory is important for designing effective television ads. Because loved brands as well as sexual images and images of fatty/sweet foods are widely used in television industry promotions, the presumption was that the sample would include ads with images of loved brands, sexual content, and fatty/sweet foods. However, ads featuring loved brands as well as ads with sexual and fatty/food images are not all the same—they are not likely to be equally arousing. Initially, brands were rank ordered from 1 to 100 to distinguish how loved they were. But, in this study, the rank ordering was collapsed into brands that were loved and those that were not. In reality, the number-one loved brand could have been very different from the 90th loved brand. Similarly, sexual imagery was tiered to distinguish how sexual ads were. While the goal was to evaluate differences in likely arousal across levels of loved brands and sexual images, there were not enough ads with loved brands or sexual imagery to make those discriminations. Similarly, not all sugary foods are equally sweet nor is there a guarantee that they equally desirable among viewers. In addition, there are other, less commonly used images in ads that have the potential to impact how those messages are processed. For example, images of items such as dare-devil motorcycle stunts, weapons, or skydivers skydiving have demonstrated the ability to increase arousal, but ultimately result in poor detail memory for message content (Culter, Penrod, & Martens, 1987; Thompson, Williams, L'Esperance, & Cornelius, 2001). As there is a good deal of research on memory using the International Affective Picture System (IAPS), future studies on memory for television ads should evaluate the usefulness of including variables for arousing images contained in IAPS (Colden, Bruder, & Mansteead, 2008; Gilman & Hommer, 2008; van Lankveld & Smulders, 2008).

Product and service images. For this study, there was no predetermined distinction between the length of time that ads displayed an image of the product or service being advertised, so images present for one scene were weighted equally as images that were present across scenes. Since the state of cognition varies from one moment to the next (Geiger & Reeves, 1993; A. Lang, 2000; A. Lang 2006; Rafaeli, 1988), measuring how well visual cues were integrated throughout the ads would have provided a more robust assessment of this variable. Because this study did not code for precise differences in how product/service images were employed within scenes or integrated across scenes, almost all of the ads met the best practice recommendation of using an image of the product/service.

Another reason there was almost no variation of product/service image usage may have been that products and services were grouped as one variable. There may have been a difference in how ads for products and ads for services employed images. It could have been that because products are tangible items, more opportunity exists to weave the product image throughout the ad. Intangible services, on the other hand, may have limited ability to display imagery portraying benefits because services are more abstract. Separating these two variables might have made it possible to more evenly evaluate differences in image use between products and image use between services.

Suggestions for Future Research

Additive effects of BPs 1 through 5. An experiment should be conducted to investigate whether or not there are additive effects associated with using a combination of processing facilitating conditions. For example, ads could be created that have between one and five features (i.e., simple syntax, concrete words, and audio/visual redundancy) that facilitate processing, and then used to test participants for differences in recognition memory.

Best practices for other ad goals. A follow-up content analysis should be conducted to examine ad goals beyond attention and recognition memory. Since ads are produced to meet a certain goal, identify the goal—such as “call right now,” “feel positive,” “take action,” etc.—and establish the best practice for different ad goals. Designing ads to influence certain attitudes or behaviors may require a different pattern of content and structural complexity. For example, research has shown that high structural complexity may lead to positive attitudes toward the message, increase liking for the message, increase intent to adopt the product advocated by the message, and increase positive evaluations of argument effectiveness (Bolls, Muehling, & Yoon, 2003; Yoon, Bolls & Lang, 1998). This line of inquiry could assist in determining if contemporary ad design structure is appropriate for achieving the desired effect.

Arousal interference. LC4MP predicts that arousing content interferes with information processing, so information presented just before arousing content appears should be poorly processed and remembered less well (A. Lang, 2006). If this is so, future content analyses should evaluate the content and structural complexity occurring in the scene before and the scene after the arousing content is presented. The evaluation should assess whether there is information that the ad is trying to get the viewer to remember, and the location of the information in relation to the arousing content.

Audio and visual complexity differences. At the onset of this study, based on the literature, the understanding was that since television presented information in two channels (audio and visual), it would behoove ad producers to maximize information in both channels. The literature explained that audio/visual redundancy provided the best chance for optimal information encoding. Based on this premise, the present study was designed to evaluate how well contemporary television ads were in compliance with the audio/visual redundancy best practice. Theory predicted that ads would maximize the use of audio channels and visual channels so no variable was created for *pictorial-storytelling* presentations nor *auditory-storytelling* presentations. This is relevant because the present study did not examine differences between visual-storytelling and audio-storytelling ads, and there is literature describing the benefits of visually storytelling messages. Specifically, the literature explained that since visual encoding is an automatic process, it continues to function (and may even increase) though the cognitive system is at or beyond capacity (A. Lang, Potter, et al., 1999; A. Lang et al., 2006). It may make sense that television ad producers would put more emphasis on the visual component of ads because research suggests that visual recognition is not resource limited, and is sustained at higher levels of structural complexity (A. Lang, Potter, et al., 1999; A. Lang et al., 2006). It may be that ad producers can get away with more complexity in the visual dimension than the audio dimension. Future research should investigate differences in ad composition for visual complexity and audio complexity and examine how they employ audio-storytelling and visual-storytelling.

Conclusion

This study provides an understanding of the elements ad producers need to consider when creating ads and the ways in which design features should vary as a function of arousing content, I-squared, and OESFs. The 10 best practices presented in this study are based on the results of experiments on how humans process mediated information. If the ad production goal is to achieve attention and recognition memory, these 10 best practices should be implemented. Continued research in this area will no doubt enhance current understanding of the role that arousal, I-squared, and OESFs play in the way audiences process television ads. In the meantime, this research offers some interesting insights into this line of inquiry, particularly by examining differences in television ad features, and provides evidence that there is a need for communication researchers and the television ad industry to consider arousal, I-squared, and OESFs when examining how viewers process television ads.

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Appendix A

Composite Day Sample

Hour	Network	Date	Market
Midnight - 12:59 am	NBC	Sun, 9-Oct	Chicago
1:00 am - 1:59 am	CBS	Tue, 29-Nov	LA
2:00 am - 2:59 am	CBS	Sun, 23-Oct	Atlanta
3:00 am - 3:59 am	NBC	Fri, 14-Oct	Atlanta
4:00 am - 4:59 am	ABC	Tue, 27-Sep	Atlanta
5:00 am - 5:59 am	ABC	Fri, 18-Nov	Dallas
6:00 am - 6:59 am	CBS	Sat, 29-Oct	Atlanta
7:00 am - 7:59 am	FOX	Sun, 30-Oct	LA
8:00 am - 8:59 am	FOX	Fri, 30-Sep	Chicago
9:00 am - 9:59 am	ABC	Sat, 1-Oct	Dallas
10:00 am - 10:59 am	NBC	Mon, 3-Oct	LA
11:00 am - 11:59 am	ABC	Sat, 1-Oct	Dallas
Noon - 12:59 pm	NBC	Sun, 6-Nov	Chicago
1:00 pm - 1:59 pm	NBC	Fri, 30-Sep	Denver
2:00 pm - 2:59 pm	FOX	Mon, 31-Oct	NY
3:00 pm - 3:59 pm	NBC	Sun, 6-Nov	Chicago
4:00 pm - 4:59 pm	ABC	Wed, 16-Nov	Denver
5:00 pm - 5:59 pm	FOX	Mon, 14-Nov	Chicago
6:00 pm - 6:59 pm	FOX	Tue, 15-Nov	Atlanta
7:00 pm - 7:59 pm	ABC	Tue, 25-Oct	Atlanta
8:00 pm - 8:59 pm	FOX	Wed, 30-Nov	LA
9:00 pm - 9:59 pm	CBS	Tue, 15-Nov	Denver
10:00 pm - 10:59 pm	CBS	Fri, 7-Oct	LA
11:00 pm - 11:59 pm	CBS	Fri, 7-Oct	LA

Appendix B

Instructions for Coding - Best Practices Study

A. Best Practices

General Coding Guidelines

1. You may fast forward through all programming.

2. Code all English-speaking for-profit ads, except ads that target children or ads without spoken words. Cues for ads that target children are the use of children-style animation, use of central actors appearing to be under the age of 18, and ads suggesting for kids to get their parents' permission before acting.

3. Do not code incomplete ads (e.g. ads that are interrupted with other programming).

4. Do not code ads for movies or videos.

5. Do not transcribe singing in the ads.

6. Watch each ad as many times as needed in order to code all necessary information.

Specific Coding of Items.

1. Enter DVD ID: Enter number assigned to DVD

*** Enter DVD Time Code.

2. Enter AD ID: Enter number assigned to ad.

3. Coder ID: Enter the ID number assigned to you.

ITEMS 4 – 5 regard program information.

4. Enter network

ABC	code = 1
NBC	code = 2
CBS	code = 3
Fox	code = 4

5. Enter time of day program aired
Look at the DVD label to determine the time block recorded.
Each time block consists of 3 hours. When viewing:

00:00:00 – 01:00:00 is the first hour of the block
01:00:00 – 02:00:00 is the middle hour of the block
02:00:00 – 03:00:00 is the last hour of the block

Enter the number to identify the time of day the ad aired:

0 – Midnight to 12:59 am
1 – 1:00 to 1:59 am
2 – 2:00 to 2:59 am
3 – 3:00 to 3:59 am
4 – 4:00 to 4:59 am
5 – 5:00 to 5:59 am
6 – 6:00 to 6:59 am
7 – 7:00 to 7:59 am
8 – 8:00 to 8:59 am
9 – 9:00 to 9:59 am
10 – 10:00 to 10:59 am
11 – 11:00 to 11:59 am
12 – Noon to 12:59 pm
13 - 1:00 to 1:59 pm
14 – 2:00 to 2:59 pm
15 – 3:00 to 3:59 pm
16 – 4:00 to 4:59 pm
17 – 5:00 to 5:59 pm
18 – 6:00 to 6:59 pm
19 – 7:00 to 7:59 pm
20 – 8:00 to 8:59 pm
21 – 9:00 to 9:59 pm
22 – 10:00 to 10:59 pm
23 – 11:00 to 11:59 pm

6. Length of ad
   Round all ads to the nearest 5 second increment except 1 second ads. Report 1 second ads as 1 second.

ITEMS 7 – 10 regard ad elements

7. Repeat ad

If the ad is a repeat of a previously aired ad	code = 1
If the ad is an original ad	do nothing

8. If yes to #7, enter original AD ID

   If the ad is a repeat of a previously aired ad, enter original AD ID number.

9. Product or Service Tangibility

Tangible Product	code = 1
Intangible Product	code = 2

Tangible Service	code = 3
Intangible Service	code = 4

To code tangibility of the product or service, determine if the product or service being advertised embeds the concept of a sensory experience such as sight, a specific type of smell, a specific type of taste, a specific type of feel, or hearing (e.g. food, toys, clothes, furniture)

10. Brand for product or service
Enter the brand being advertised

ITEMS 11 – 23 regard ad design
Prepare a text only transcript of the ad. Do not include identification of ad design features such as a surprised look on an actor's face or special effects.

11. Use of chronological order

Chronological	code = 1
Not chronological	code = 0

Using the ad transcript, code the ad as using chronological order if one of the following applies:

(a) The ad first presents the cause, next the change, and lastly the consequences

(b) The ad first provides a description of the product, next explains how to use the product, and lastly describes results from using the product

(c) The ad first provides a description of the benefit to the viewer, next explains how it has improved, and lastly describes results from using the product

Code the ad as **NOT** in chronological order if one of the following applies:

(a) The ad first describes results from using the product, next explains how it has improved, and then provides a description of the benefit to the viewer

(b) The ad explains how to use the product, next describes results from using the product, and then provides a description of the product

(c) The ad first presents the change, next presents the consequences of the change, and then presents the cause of the change

12. Number of total sentences in the ad
Enter the total number of sentences in the ad.

Definition of a sentence: a word or a group of syntactically related words that states, asks, commands, exclaims something, or expresses a complete thought (Agnes & Guralnik, 1999; Soukhanov, 1986).

Examples of sentences include:

(a) I'm almost home.

(b) Is it hot?

(c) Stop!

13. Number of total sentences that are 3 or more words long (do **NOT** include sentences that are questions)

Enter the number of sentences that contain 3 or more words. Do not include sentences that ask questions. The purpose is to allow for ratio comparison of complex syntax to simple syntax.

14. Number of simple syntax sentences in ad

Simple syntax sentences will use the subject-verb-object sequence and must have a minimum of three (3) words. The subject or object elements are required for the sentence to qualify as using simple syntax order. Sentences with implied subject and/or object elements are considered as not using simple syntax.

To code for type of syntax used, use the transcript and count each sentence that uses the standard subject-verb-object ordering.

Enter the number of simple syntax (subject-verb-object) sentences in the ad. Do **NOT** include sentences with questions.

Examples of simple syntax sentences:

(a) We've got a deal for you!

(b) I like cherries.

Examples of non-simple syntax sentences with implied subject:

(c) Wake up to a pancake breakfast.

(d) Stock up now and save big bucks.

Example of non simple syntax sentences without an object:

(e) You should come.

15. Number of words in the ad
Enter the total number of words in the ad.

1. Count the following as one (1) word:

   (a) Contractions such as:

   - it’s
   - doesn’t
   - we’ll

   (b) Hyphenated words (except phone numbers):

   - non-drowsy
   - power-clean
   - mail-in
   - night-night

   (c) Abbreviations:

   - TV
   - DVD
   - VCR

   (d) .com internet addresses:

   - bigblueworld.com
   - homebuilers.com
   - trickoutyourcar.com

2. Treatment of numbers:

   - If the announcer says “eighty-nine-ninety-nine” code that as one (1) word.
   - If the announcer says “forty-three dollars and eighteen cents” code that as five (5) words (forty-three, dollars, and, eighteen, cents).
   - If a phone number is announced, code the numbers as described above. If the announcer includes words (such as 1-800-LAWYER), code the word separately. If the announcer speaks each number or letter individually, code each individual number or letter as a separate word. If the announcer combines single-digit numbers to make double-digit numbers, code the double-digit as one word.

Example 1: 1-800-LAWYER should be coded as four (3) words (one, eight-hundred, lawyer).

Example 2: 1-800-L A W Y E R should be coded as eight (8) words (one, eight-hundred, L, A, W, Y, E, R).

Example 3: Each number spoken: 1-877-976-3012 should be coded as eleven (11) words (one, eight, seven, seven, nine, seven, six, three, zero, one, two.

Example 4: Single-digit numbers spoken in double-digit combination: 877-957-5252 should be coded as eight (8) words (eight, seven, seven, nine, five, seven, fifty-two, fifty-two).

3. Do **<u>NOT</u>** include non-words in the word count:

(a) Examples of non-words:

- aah
- oooh
- huh

16. Number of concrete words in the ad
Enter the number of concrete words in the ad.

Concrete words are defined as nouns that embed the concept of sensory experience such as sight, sound, smell, taste, or touch, and refer to the product being advertised. Using the transcript, count each concrete words in the ad.

Example: If an ad is about a coffee shop, nouns such as cup, coffee, and bean will count as concrete words.

Example of abstract words: If an ad is about a coffee shop, words that describe the scent such as *it smells great* or *it smells wonderful* will NOT count as concrete words. In this example, *great* and *wonderful* are abstract because they do not specifically refer to the scent's characteristic.

17. Use of image of the product/service

If the product/service is shown	code = 1
If the product/service is not shown	code = 0

To code use of visual images that show the product or service, determine whether or not the product or service advertised is shown during the ad. For advertised serviced, showing a graphic counts as showing the service. The threshold is higher for products; the actual product must be shown in the ad to count as showing the product.

18. Number of total scenes in the ad
Simply count the number of scenes in the ad and enter this number. A scene change can be marked by a transition such as a cut, edit, swipe, fade, or dissolve.

19. Number of scenes of matched audio/visual information in ad
Enter the number of scenes that used matched audio and visual information.

To code matched audio/visual information, count each scene in which a redundant visual image (in relation to what is being said) is present during the narrative. Matched audio/visual information is defined as television information that conveys the same message in the audio and visual tracks. In order for a scene of audio and visual information to be considered a match, a matching narrative must be presented within the duration of the same visual information being presented in that scene. Within a scene, whenever an image (picture) appears and the image matches the narrative description, code it as audio/visual matching.

20. Loved brand – see Appendix A

If the brand is loved (brands 1 – 25)	code = 5
If the brand is loved (brands 26 – 50)	code = 4
If the brand is loved (brands 51 – 75)	code = 3
If the brand is loved (brands 76 – 100)	code = 2
If the brand is not listed	code = 1

21. Use of sexual imagery

If nudity is used	code = 5
If implied nudity is used	code = 4
If partial nudity is used	code = 3
If suggestive clothing is used	code = 2
If sexual imagery is not used	code = 1

Sexual imagery is classified as youthful, healthy, fit individuals and is categorized as follows:

5 - nudity: full nudity; not wearing clothes
4 - implied nudity: wearing only a towel; appearing to be nude, but with male or female genitalia, or female breasts off camera; appearing to be nude, but in silhouette
3 - partial nudity: wearing only underwear; males with their shirts off; women in bikini bathing suits;
2 - suggestive clothing: open shirts which expose cleavage, tight-fitting clothing which accentuates the body; mini-skirts; short-shorts.

22. Use of fatty or sweet food imagery

If fatty or sweet food imagery is used	code = 1
If fatty or sweet food imagery is not used	code = 0

Code an ad as showing fatty or sweet food imagery if the ad shows foods that are fatty such as beef, lamb, pork, or chicken, or foods that are sweet such as cakes, cookies, ice cream, pies, donuts, or chocolate candy (see Appendix D for more examples). It also includes diet, low fat, and lean varieties of the products just listed, as they are likely to evoke fatty or sweet food imagery perception.

23. Video Information Introduced per second score
Enter video I-squared per second score from video I-squared coding sheet.

24. Audio Information Introduced per second score
Enter audio I-squared per second score from audio I-squared coding sheet.

25. Information Introduced (Video and Audio) per second score
Enter I-squared per second score from the **Total Visual and Audio Scores** on the Audio I-squared coding sheet.

26. Visual Structural Features Per Second Score
Enter Visual Structural Features Per Second Score from the Visual Structural Features Per Second Score on the video I-squared coding sheet.

27. Audio Structural Features Per Second Score
Enter Audio Structural Features Per Second Score from the Audio Structural Features Per Second Score on the audio I-squared coding sheet.

28. Structural Features per second (Video and Audio) score
Enter the total structural features per second score from the **Total Visual and Audio Scores** on the Audio I-squared coding sheet.

B. Video Information Introduced by a Structural Feature.

Coding Instructions.

The procedure for coding this variable is:

1. Watch the entire message. Some of the decisions that will be made during coding will be related to the content of the message. Therefore, the coder should watch the message at least once so that the message is understood.

2. Go to each place in the message where a camera change occurs or a structural feature (like a video graphic) is introduced in a way which mimics a camera change. The frame before the camera change will need to be examined. (In the case of a camera change that includes a small fade or dissolve, you will want to look at the last clear frame before and the first clear frame after the camera change). For picture-in-picture frames, consider the the portion of the frame that is greater than 50%.

3. For each camera change you will consider each of the seven dimensions described below. If the dimension is present circle the one (1). If not, do nothing.

4. You will sum the number of one's (1s) and that will be the total information introduced for that camera change.

5. At the end, sum all the information introduced for all the camera changes for a given ad to create the total information introduced score.

6. After summing all the information introduced, divide the sum total by the number of seconds in the ad to create the information introduced per second score.

7. Next, sum all of the OESFs for a given ad, divide the sum total by the number of seconds in the ad to create the structural features per second score.

Definitions of the Dimensions

1. Emotion
Emotion is defined by the presence in the frame of emotional material. This can include places that are associated with emotion (e.g. cemeteries, amusement parks); events that are associated with emotion (e.g. weddings, funerals); people experiencing strong emotion (e.g. crying, laughing); people engaged in activities which elicit strong emotion (e.g. fighting, having sex, arguing).

On either side of a camera change there are five possibilities which should be coded as follows:

No emotion	change to	no emotion	do nothing
Emotion	change to	same emotion	do nothing
No emotion	change to	emotion	code = 1
Emotion	change to	*much* more, *much* less, or a *very different* emotion	code = 1
Emotion	change to	no emotion	code = 1

2. New
If the **central object** after the camera change has **not** been seen before in **this** message then you would code it new. Thus, a change to a new person or a new part of the room – would be new. In addition, if you have a long shot of someone – and cut to a close up of a body part – that would also be new. In other words – a person's feet, for example, is a new central object compared to that person. On the other hand if the cut is to a close up of the person – but the central object IS still the person, as a whole – just closer – or further away – or from a different angle – that is **not** NEW. Also – if later on – we come back to a previous central object – it is NOT new.

If **not** new do nothing
If new code = 1

3. Relatedness
The new scene is related if it is connected, by the story in the message, to what occurred immediately preceding it. As a general rule, things that make sense in terms of the story –are related. Things which are not expected (from the story) or are very much not what the previous seen led you to expect are not related.

If related do nothing
If not related code = 1

4. Object
To code this dimension you must make a decision if the central object of the new frame is the same object as in the previous frame. So, for example, if we have a long shot of a person and then we cut to a close-up of that person. That person is still the object. Hence there is no change in object. If we are looking at a person and then have a close up of that person's hands – that *is* a change in central object – from a person to just a (relatively unrecognizable) piece of that person. This is a change in central object. If we are looking at a football game and we cut to a close-up of a single player. This is a change in object, from the game to a player. If we are looking at an individual and change from that individual to a group shot of that individual talking to two other people, that is a change from one person to a group of people.

If new object code = 1
If old object do nothing

5. Distance
To code distance, you must decide if the central object appeared to be closer or further away from the audience before the camera change. The central object can be the same as or different from the central object before the camera change.

If closer code = 1
If further do nothing

6. Perspective
To code perspective, you must assess whether you are looking at the central object (whether it is the same or different) from about the same perspective (e.g. straight ahead, from the left, from the right, from below, from above, etc.) as you were in the previous frame or from a different perspective. If you are looking at someone from in front of them, and then after the camera change you are in back of them, that is a change in perspective. If you are looking at something from on level, and then from above or below, or at an angle, that is a change in perspective. Perspective can change along with the

central object. So you could be looking on the level at a person, then up at an airplane. That would be both a new object and a change in perspective.

If same perspective	do nothing
If different perspective	code = 1

7. Form change

For this dimension, we are considering the overall look of the message from a structural point of view. If the camera change coincides with a change in the overall look, in particular a change that would be like mimicking a change in medium, then this is considered to be a Form change. So, for example, a cut from moving images to a still image would be a Form change. A cut from color to black-and-white (or vice-versa) would be a Form change. A cut from audio visual to audio only would be a Form change. A cut from pictures to text on screen would be a form change. A cut from a full screen to multiple screens would be a form change.

If form change	code = 1
If no form change	do nothing

C. Audio Information Introduced by Audio Structural Feature.

Coding Instructions.

The procedure for coding this measure is:

1. Watch the entire message several times through, to get a sense of the story, emotional tone, etc.

2. Record the first onset. **DO NOT** code it for I-squared, as it is only the beginning of the message, and not a structural feature within it. If two onsets occur within the first 1 second at the very beginning of a message, code them as the beginning of the message (i.e. line 0 on the coding sheet).

3. Watch the entire message once more, and write down emotional words as you hear them (see definition of *emotional words* under <u>Dimensions</u> below).

4. Go through the message again more slowly, and code each Orienting Eliciting Structural Feature (OESF) in the first column of the coding sheet. For each OESF, describe the sound (for reference).

5. For each OESF or voice change, listen again as many times as necessary, and code each of five dimensions 1 (for presence) or 0 (for absence), as indicated under <u>Dimensions</u> below.

6. Sum each column for the total in each dimension, then sum all dimensions for a total I-squared score. Sum the number of OESFs and Voice Changes for the total number of audio structural features.

7. After summing all the audio structural features for a given ad, divide the sum total by the number of seconds in the ad to create the audio information introduced per second score.

8. After summing all the OESFs for a given ad, divide the sum by the number of seconds in the ad to create the audio structural features per second score.

The following are considered Auditory Orienting Eliciting Structural Features, or OESFs:

1. Voice Changes [VC]
2. Voice Onsets [VO]
3. Sound Effect Onsets [SFX]
4. Music Onsets [MO]
5. Silence Onsets [Sil]
6. Emotional Word Onsets [EW]

1. *Voice Changes* are defined as the immediate replacement of one voice with another. This is usually a change from one person's voice to another person's voice, but can also be a form change: a change from a normal tone of voice to screeching or whispering (or vice-versa), or a change from a normal sounding voice to the same voice computer-distorted, or mixed with other sound (or vice-versa), etc. A voice in a song qualifies as immediately replacing one voice with another if there is a clear distinction between the voice in the song and the talent voice in the ad. Also, if there are multiple individual voices (not a chorus) in a song, each time one voice is replaced by another constitutes a voice change. To be considered a voice, there must be words. Screams (aaahhhhh), moans (ooohhhhh), and similar effects, while they are vocalizations, include no words and so are considered sound effects.

2. *Voice Onsets* are any time a voice begins immediately following something other than a different voice. So, if a speaker begins talking after a sound effect -- it is a voice onset. Likewise, if the speaker begins talking after silence -- it cannot be a voice change, because the speaker does not immediately replace another voice. It is a voice onset. If the speaker pauses in his/her delivery, and then begin speaking again, code this as a voice onset only if it has been two seconds or longer since the same voice last stopped speaking. This same rule applies if a speaker's delivery is replaced momentarily by another OESF, but the same speaker resumes less than two seconds later. The rule for what constitutes a voice explained above applies here.

3. *Sound Effect Onsets*: With this OESF it is very important to remember that we are trying to identify structural features which elicit the orienting response. This response is also known as the "what is it?" response. With sound effects, we are looking to identify sounds, which would cause the "what is it?" response in someone *who is watching the TV clip*.

   In most cases, sounds accompanying matching video will NOT do this.

   There are exceptions. In non-animated television, this will primarily be sounds that are emotional. For example, consider the sound of a gunshot. This will elicit an orienting response even if you first see the weapon on the screen.

   For animation/cartoons, it is hard to know what sounds to expect to accompany the visuals you're seeing on screen. When the sound accompanying cartoon is one that you believe would elicit the "what is it?" response, code it as an OESF.

   Also should code sound effects when they occur *without* accompanied video on screen (the sound of a car crash with no car in sight).

   Mixtures of sound effects that cannot be easily separated are considered one sound effect. In determining whether a sound is one sound effect or two, return to the conceptual level: is there enough time for two orienting responses, or do you hear the entire amalgam as one effect?

4. *Music Onsets* are any time music begins. Music can be anything from a popular song in the background, to a single note played on a single instrument for any duration, to something else entirely. It is possible that in such an instance the distinction between ‘sound effect’ or ‘music,’ and ‘new music’ or ‘old music’ is not always obvious (i.e., one may ask “is that funky New Age music, a crazy sound effect, or both?”). When making difficult distinctions, some clues can be found: steady rhythm and repeated sounds are often indicative of music. Sound effects tend to be more jarring. In the end, if a distinction cannot be made, and the onset is enough to elicit an OR, code it *somewhere*.

Music can also change in intensity. For example soft music may abruptly swell to a crescendo. When this happens, you should code the more intense musical selection as the onset of a new piece.

5. *Silence Onsets* are defined as total silence, the absence of background sound, natural sound or any other sound, for four seconds or longer.

6. *Emotional Word Onsets* occur when an emotional word is spoken. Emotional words are words that elicit orienting and big physiological responses in subjects by themselves. Emotional words can be slang or formal terms, but the threshold here is quite high.

Categories of emotion words are: illegal substance names (heroin, cocaine, pot, crack), sexual words (sex, prostitute), profanity (all four letter words and related), money words (lottery, bling-bling, cash, rebates, cash back), and violent words (dead, murdered, shot, knifed).

Emotional words are always coded as +1 for the Emotion Dimension (see below), along with other dimensions which apply.

<u>General Notes on Identifying OESFs</u>

1. When two onsets occur simultaneously (music starts with a voice) it is coded as one onset (it elicits one orienting response, so it is one OESF). Name it for whichever you please (a music onset or a voice onset), but code the dimensions for both. For example, if the voice is old but the music is new, and the words are of a different emotional tone than that of the music, code +1 for new (the music) AND +1 for emotion change (the voice).

2. Background noise/music: the onset is an OESF, if it is the first onset in the message, however, after that we no longer care about it. Sounds in the background that are not heard until the third or fourth time through the message are likewise uninteresting; they are not noticeable enough to elicit orienting, so by definition, they are not OESFs.

3. Initial sound (the first onset of the piece to be coded): everything has to begin somewhere, and we aren't currently interested in where things begin. The sound/onset that starts the message is not an OESF (see instruction 3 above).

As each OESF is identified, it is coded along 5 dimensions for the amount of information the OESF introduces. These dimensions are defined below:

<u>Dimensions coded for Information Introduced:</u>

1. New
2. Unrelated
3. Form Change
4. Emotion
5. Emotion Change

New: An OESF is coded NEW (+1) if it has never been heard before. The first hearing of a sound effect, a song, an emotional word, or silence, is new. Voices that are heard for the first time are new. Mixed sounds that were previously heard separated or separated sounds that were previously heard mixed, are new. New forms of old voices are *not* new (Although their onset is coded as an OESF, see definition of Voice Changes above).

If new	write +1 in the *NEW* column
If not new	do nothing

Unrelated: An OESF is coded UNRELATED (+1) if it is unexpected, or random. To determine whether or not an OESF is related or not, examine the message content of the six seconds preceding the OESF, and determine whether the OESF matches the story being told. If not, then it is unrelated. For example, if two people are enjoying a board game, and suddenly the rumbling of a herd of elephants is heard from inside the gameboard, it is unexpected and coded as unrelated. Similarly, if people are hiking in the mountains and the scene is interrupted by a burst of static that then disappears, it is random and coded as unrelated.

If unrelated	write +1 in the *UNRELATED* column
If related	do nothing

Form Changes: Only Voice Onsets and Voice Changes can be coded as FORM CHANGES (+1). A form change occurs when the tonal quality of a voice changes. Changes in the quality of a voice, distortion of any sort, are also form changes. Changes in accents, emotion, intensity, rhythm, volume, etc. alone are NOT form changes. For example, going from a loud voice to a soft voice is not a form change, because although volume has changed, the quality of voice has not. However, going from a normal speaking voice to a whisper is a form change, because a whisper has a different quality of sound from a normal speaking voice.

Form change can occur across two speakers:

Example: Speaker A. is talking in a normal voice, then speaker B. interrupts them with a whispered sentence -- code as *voice change* (OESF) with a *form change* (+1).

Form change can also occur within the same speaker:

Example: Speaker A. talks in a normal voice and then begins to whisper -- *also* code as a voice change (OESF) with a form change (+1).

If a form change	write +1 in the *FORM CHANGE* column
If not a form change	do nothing

Emotion: An OESF is coded for EMOTION (+1) when a sound is intrinsically emotional. An OESF is emotional if it cannot be made to be unemotional. For example, one cannot cry without emotion; crying can be happy, sad, excited, painful, but it is always and without doubt emotional, so crying is coded for emotion. Other emotional sounds include, but are not limited to, screams, moans, gunshots, slaps, baby coos, and car crashes.

If emotional	write +1 in the *EMOTION* column
If not emotional	do nothing

Emotion Change: An OESF is coded for EMOTION CHANGE (+1) if there is a significant change in valence or arousal from the content in the 6s preceding the OESF. From happy to sad, from sad to happy, or from neutral to happy or sad is an emotion change. From a little negative to a whole lot negative, or a bit positive to a bunch positive is an emotion change. Consider dimensional theory of emotion. Significant (meaning very large) changes on the arousal axis or on the valence axis are emotion changes.

If emotion change	write +1 in the *EMOTION CHANGE* column
If not emotion change	do nothing

Best Practices Coding Sheet

1. DVD ID: _________ *** DVD Time Code: _________ 2. AD ID: _________ 3. Coder ID: _________
4. Network: ______ (ABC code = 1 NBC code = 2 CBS code = 3 FOX code = 4)
5. Time of day: __________ 6. Length of ad (in seconds): 1 15 30 60 other ______

7. ____Repeat ad
If yes code = 1
If no do nothing

8. ____ If yes to #7, enter original AD ID

9. ____Product or Service tangibility

If tangible product	code = 1
If intangible product	code = 2
If tangible service	code = 3
If intangible service	code = 4

10. Brand: ______________________________

11. ____Use of chronological order

If chronological	code = 1
If not chronological	code = 0

12. ____Number of total sentences in the ad

13. ____Number of total sentences that are 3 or more words long and have no questions

14. ____ Number of simple syntax sentences in the ad

15. ____ Number of words in the ad

16. ____ Number of concrete words in the ad

17. ____ Use of image of the product/service

If the product/service is shown	code = 1
If the product/service is not shown	code = 0

18. ____ Number of total scenes in the ad

19. ____ Number of scenes of matched audio/visual information in ad

20. ____ Loved brand

If the brand is loved (brands 1 – 25)	code = 5
If the brand is loved (brands 26 – 50)	code = 4
If the brand is loved (brands 51 – 75)	code = 3
If the brand is loved (brands 76 – 100)	code = 2
If the brand is other than loved	code = 1

21. ____ Use of sexual imagery

If nudity is used	code = 5
If implied nudity is used	code = 4
If partial nudity is used	code = 3
If suggestive clothing is used	code = 2
If sexual imagery is not used	code = 1

22. ____ Use of fatty or sweet food imagery

If fatty or sweet food imagery is used	code = 1
If fatty or sweet food imagery is not used	code = 0

23. _______Video I-squared/sec score

24. _______Audio I-squared/sec score

25. _______I-squared/sec (Video and Audio) score

26. _______Visual Structural Features/sec score

27. _______Audio Structural Features/sec score

28. _______Structural Features/sec (Video and Audio) score

Visual Information Introduced

Camera change	Emotion change	New?	Un-related?	Object change	Closer?	Perspective change	Form change	Total
1	1	1	1	1	1	1	1	______
2	1	1	1	1	1	1	1	______
3	1	1	1	1	1	1	1	______
4	1	1	1	1	1	1	1	______
5	1	1	1	1	1	1	1	______
6	1	1	1	1	1	1	1	______
7	1	1	1	1	1	1	1	______
8	1	1	1	1	1	1	1	______
9	1	1	1	1	1	1	1	______
10	1	1	1	1	1	1	1	______
11	1	1	1	1	1	1	1	______
12	1	1	1	1	1	1	1	______
13	1	1	1	1	1	1	1	______
14	1	1	1	1	1	1	1	______
15	1	1	1	1	1	1	1	______
16	1	1	1	1	1	1	1	______
17	1	1	1	1	1	1	1	______
18	1	1	1	1	1	1	1	______
19	1	1	1	1	1	1	1	______
20	1	1	1	1	1	1	1	______
21	1	1	1	1	1	1	1	______
22	1	1	1	1	1	1	1	______
23	1	1	1	1	1	1	1	______
24	1	1	1	1	1	1	1	______
25	1	1	1	1	1	1	1	______

Total visual information introduced: ______

Total Visual I-squared: ________ / Length of Ad: ________ = Visual I-Squared Per Second Score: ________

Total Visual Structural Features: ________ / Length of Ad: ________ = Structural Visual Structural Features Per Second Score: ________

Audio Information Introduced

	Sound Description	Type	New	Unrelated	Form Change	Emotion	Emotion Chg
0. (no points):							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
25.							
Subtotal For Each Category:							

Total Audio I-Squared: _________ / Length of Ad: _________ = Audio I-Squared Per Second Score: _________

Total Audio Structural Features: _________ / Length of Ad: _________ = Structural Audio Structural Features Per Second Score: _________

Total Visual and Audio Scores:

(23) Total Visual I-squared/sec: ________ + **(24)** Total Audio I-Squared/sec: ________ =
(25) I-Squared Per Second Score: ________

(26) Total Visual Structural Features/sec: ________ + **(27)** Total Audio Structural Features/sec: ________ = **(28)** Structural Features/sec Score: ________

Appendix C

100 Most Loved Brands[1]

1. Coca-Cola
2. Microsoft
3. IBM
4. GE
5. Intel
6. Nokia
7. Disney
8. McDonald's
9. Toyota
10. Marlboro
11. Mercedes-Benz
12. Citi
13. Hewlett-Packard
14. American Express
15. Gillette
16. BMW
17. Cisco
18. Louis Vuitton
19. Honda
20. Samsung
21. Dell
22. Ford
23. Pepsi
24. Nescafé
25. Merrill Lynch
26. Budweiser
27. Oracle
28. Sony
29. HSBC
30. Nike
31. Pfizer
32. UPS
33. Morgan Stanley
34. JPMorgan
35. Canon
36. SAP
37. Goldman Sachs
38. Google
39. Kellogg's
40. Gap
41. Apple
42. Ikea
43. Novartis
44. UBS
45. Siemens
46. Harley-Davidson
47. Heinz
48. MTV
49. Gucci
50. Nintendo
51. Accenture
52. L'Oreal
53. Philips
54. Xerox
55. eBay
56. Volkswagen
57. Wrigley's

58. Yahoo!
59. Avon
60. Colgate
61. KFC
62. Kodak
63. Pizza Hut
64. Kleenex
65. Chanel
66. Nestlé
67. Danone
68. Amazon.com
69. Kraft
70. Catepillar
71. Adidas
72. Rolex
73. Motorola
74. Reuters
75. BP
76. Porsche
77. Zara
78. Panasonic
79. Audi
80. Duracell
81. Tiffany & Co.
82. Hermes
83. Hertz
84. Hyundai
85. Nissan
86. Hennessy
87. ING
88. Smirnoff
89. Cartier
90. Shell
91. Johnson & Johnson
92. Moët & Chandon
93. Prada
94. Bulgari
95. Armani
96. Levi's
97. LG
98. Nivea
99. Starbucks
100. Heineken

[1]("Business Week Online," 2005a)

Appendix D

Examples of Fatty and Sweet Foods

Examples of fatty foods include:

1. Fresh meat
2. Cooked meat
3. Meat sandwiches
4. Meat dishes
   - Meat lasagna
   - Meat casserole
5. Canned meats
   - Meat chili
   - Meat spread
   - Corned beef
   - Sausage
   - Ham
   - Pig feet
   - Meat stew

Examples of sweet foods include:

1. Cake
2. Cake muffins
3. Cookies
4. Cheesecake
5. Chocolate bars
6. Cupcakes
7. Custard
8. Donuts
9. Ice Cream
10. Pastry Danish
11. Pie
12. Pudding
13. Tarts
14. Turnovers

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ACADEMIC BACKGROUND

- Ph.D. in Mass Communications, Indiana University, Indiana, 2008
- Advanced Communications/Computer Officer Training, Keesler AFB, 2005
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- MS in Management, Colorado Technical University, Colorado, with Honors, 2000
- Basic Communications/Computer Officer Training, Keesler AFB, 1998
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